THE WORLD BANK

Papua New Guinea High Frequency Phone Survey on COVID-19

Data Collection: December 2020 – January 2021

Photography throughout

Cover Ashleigh Conor ©2014

Page 7 Ashleigh Conor ©2016

Page 28 Ashleigh Conor ©2016

Page 39 Ashleigh Conor ©2015

Page 40 Ashleigh Conor ©2014

Page 48 Ashleigh Conor ©2014

Page 52 Ashleigh Conor ©2014 – Grade 4 Students read books from the classroom library in Joana Wambriwari classroom at St Johns Primary School, Port Moresby.

Table of Contents

Acknowledgements

This report was written by Kristen Himelein, James Carroll Waldersee, and Masoomeh Khandan of the World Bank and Stephanie Laryea of UNICEF-PNG using the first and second round of the World Bank's High Frequency Mobile Phone Survey to Assess the Socio-Economic Impacts of COVID-19 in Papua New Guinea and the first round of the UNICEF-PNG's Social Challenges and Hardship Survey in Papua New Guinea.

The team gratefully acknowledges the Korea Trust Fund for Economic and Peace-Building Transitions for financing the data collection and analysis for the World Bank survey and USAID for financing the analysis of the UNICEF PNG survey. The team also greatly appreciates the contributions of Gwen Maru, Shuwen Zheng, and Bagus Arya Wirapati in processing the data and informing the analysis, and C. Jason Smith for his support in editing. The authors thank World Bank colleagues Aneesa Arur, Kathleen Beegle, Da Woon Chung, Matthew Dornan, Virginia Horscroft, Kari Hurt, Rinku Murgai, Kenia Parsons, Ilyas Sarsenov, Jane Sprouster, Changqing Sun, Paul Vallely, Netsanet Walelign Workie, Sonya Woo, and Hassan Zaman, as well as UNICEF colleagues Judith Bruno, Ali Safarnejad, Andrew Musyoki Sammy, and Jayachandran Vasudevan for their comments on earlier drafts.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development / World Bank, UNICEF and its affiliated organizations, nor those of the Executive Directors of the World Bank nor the governments they represent.

Abbreviations

CI	Confidence Interval
COVID-19	Coronavirus Disease 2019
CSSE	Center for Systems Science and Engineering at Johns Hopkins University
DHS	Demographic and Health Survey
ECDC	European Centre for Disease Prevention and Control
FCS	Fragile and Conflict Afflicted Situations
GDP	Gross Domestic Products
HFPS	High Frequency Phone Survey
HIES	Household Income and Expenditure Survey
NAT	Nucleic Acid Test
NCD	National Capital District
NDoH	National Department of Health (Papua New Guinea)
NGO	Non-Governmental Organization
PNG	Papua New Guinea
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

Executive Summary

This joint report by the World Bank and UNICEF PNG presents the findings from two mobile phone surveys conducted in December 2020 and January 2021 in Papua New Guinea. The World Bank survey, conducted in December 2020, was the second in a series, with the first round being completed in June and July 2020. The round 2 survey interviewed a total of 2,820 respondents about their individual and household conditions, including 1,016 of the original round 1 respondents. These results were weighted using information from the 2016-2018 Demographic and Health Survey (DHS) to reflect nationally representative estimates of the socioeconomic impacts of COVID-19. The UNICEF survey, conducted in January 2021, targeted re-contacting all 2,534 households from the World Bank round 2 survey with children under the age of 15, and achieved a final sample of 2,449. These results were also weighted using information from the DHS to develop representative estimates for households with children under 15, 79.8 percent according to the DHS. The UNICEF survey included sections on household impacts as well as on the children living within the household.

One year into the pandemic, COVID-19 remained a major concern for economic well-being and household health. Nationally, 77 percent of respondents indicated that they were somewhat or very worried about their household finances while 92 percent of the households with children under 15 were somewhat or very worried about their households' health. In response to the threat to household health 85 percent of households with children indicated taking at least some action in the previous week to reduce the spread of COVID-19, with the most common being to avoid handshakes, reducing trips to the market, and avoiding large gatherings. Actions such as more frequent handwashing and mask wearing were most common in the National Capital District (NCD) area, being practiced at least some of the time by nearly all respondents from households with children and all of the time by around 40 percent, but were less common and less frequent in other areas.

More than one-quarter of those working in January 2020 had stopped by December, with the largest losses in the agricultural sector, while women, those in the service sector, and those in urban areas have seen comparatively stronger recoveries in employment. Despite some recovery in the second half of 2020, there remained about a 28 percent loss in total employment between January and December 2020. According to the round 2 World Bank survey, 67 percent of respondents reported working in the January baseline, compared to 38 percent at the time of round 1 in June and 48 percent at the time of round 2 in December. Women experienced a more consistent recovery but had lower baseline participation in employment. These trends may reflect the different types of work done by men and women. While agriculture was the most common sector for both groups, a larger share of women worked in the service sector, in particular in retail and trading activities. The agricultural sector had the highest net loss in jobs over 2020, while the service sector was the most resilient and had the strongest recovery. In addition, the recovery has been stronger in urban areas than in rural areas, and the share of women in the workforce was disproportionately urban.

The crisis continued to have serious impacts on the most vulnerable groups, likely leading to increases in poverty and inequality in 2020. Those in the bottom 40 percent of the wealth distribution have returned to work more slowly than other groups, and full time, informal sector workers, which includes most workers in the bottom 40 percent and the middle quintile, as well as those in the informal sector, were more likely to see reductions in pay if still working. Also, while employment income has rebounded across all groups and categories, the largest gains were in the top 40 percent. Finally, the recovery in employment was strongly related to location, with econometric analysis showing higher declines in employment over 2020 for Chimbu, Enga, Southern Highlands, and Manus Provinces, as well as the Autonomous Region of Bougainville, compared to the NCD.

A substantial portion of agricultural households reported declining demand for their products female headed households continued to disproportionately expect lower or no income from agriculture. In addition, this round of the World Bank survey collected more detailed information on the agricultural activities of households, including sales and home production, to explore the possibility of improved domestic markets for agricultural products as imported food became more expensive or difficult to find. While the survey found substantially lower consumption of imported foods, households reported increased home garden production, particularly outside of the top 40 percent, but overall lower demand for agricultural goods from local markets.

Though supply chains continued to function in both urban and rural areas, there has been a substantial increase of those that cannot afford to buy food in rural areas. This impact was mitigated to some extent by the heavy reliance in rural areas on home production, but the marked increase from round 1 of the World Bank survey, coupled with the fact that the bottom 40 percent were the most likely to be unable to purchase essential food items, indicate a worsening food security environment for the poorest and most vulnerable groups. These findings were further supported by a substantial decrease in food insecurity in urban areas between rounds 1 and 2 and a marginal increase in rural areas in the same period.

The incidence and severity of food insecurity varied significantly between urban and rural areas and within regions. The severity of food security was the lowest in urban areas in the Southern region, and highest in urban areas of the Island region and in both urban and rural areas of the Momase region. Coupled with the results on declining food affordability, this finding is further evidence of households having difficulty in purchasing and growing sufficient food. In the absence of a comparable baseline, it remains difficult to attribute these issues to COVID-19 or economic decline generally. Additionally, in comparing the food insecurity findings at the individual level for evidence of inequality within households, the analysis finds no significant differences in food insecurity between men and women.

Respondents reported declines in public service provision in recent months, with more than one-third of households with children perceiving declines in the availability of health services in the last 30 days, particularly in urban areas of the Highlands region, and rural areas in the Islands and Southern regions. Though nationally representative estimates showed limited evidence that COVID-19 was directly preventing those that needed medical care from seeking it--either as urgent, preventative, or routine care--the survey results did, however, show there were important differences in access between geographies and types of care. Also, the main reasons for being unable to access needed care--a lack of affordability and the inability to travel--point to declining economic conditions and mobility restrictions as exacerbating existing issues with health care service delivery. The most difficulty in accessing urgent care occurred in the Highlands region and for those from households in the bottom 40 percent. More than 95 percent of those in urban areas requiring routine care, such as family planning services or tuberculosis care, were able to access the needed care, compared to less than 75 percent of those in rural areas, particularly in the Highlands and Momase regions. In addition, less than 70 percent of those in the bottom 40 percent of household wealth were able to access needed routine care compared to 98 percent in the top 40 percent. Similar issues were seen in preventative care, including childhood vaccines and pre-natal care, where there were particular issues among those in the bottom 40 percent and in the Highlands region, where only about 75 percent of respondents were able to access services, compared with more than 99 percent in each of the other regions. Respondents noted few issues in accessing services for children, with nearly all children requiring either preventative or urgent medical care being able to access health services.

Following the reopening of schools nearly all students returned and there was no evidence of closures leading to a widening of the gender gap in primary education. Prior to the COVID-19 pandemic, there had been a modest decline in school attendance between the 2019 and 2020 school years, perhaps reflecting the already deteriorating economic conditions in PNG. Following school re-openings, nearly all students returned, with less than 2 percent remaining out of school once the school had reopened, though nearly 20 percent delayed their return. There were no differences between boys and girls in delays or returning generally. While schools were closed, less than 10 percent of primary and elementary school students participated in distance learning, with the main reason cited as no materials were provided by the school.

Water, sanitation, and hygiene services were also insufficient to meet household needs. At a time when handwashing is an important preventative measure to slow the spread of the virus, between 20 and 50 percent of households with children did not have sufficient access to water in the week prior to the survey, and the majority did not have sufficient access to soap.

While the surveys did not show large deteriorations in public trust and security issues since June, experiences varied across geography and demographic characteristics and systematic declines were most evident in the NCD. Compared to the rest of the country, markedly higher shares of respondents in the NCD noted deteriorations since June in situations related to theft, alcohol and drug abuse, intimidation by police, violence by police, and domestic abuse, as well as higher declines in overall community trust, which could be an indicator of rising tensions. In addition, there were potential warning signs of the impacts of the prolonged crisis on children, with more than one-third of children exhibiting negative behavioral changes in the previous 15 days--though again a lack of baseline data limits the ability to establish a causal link specifically with COVID-19.

This report uses data the predates the current rise in cases and therefore should be considered a snapshot of the situation in December 2020 and January 2021. The next round of data collection is currently planned to start in early May 2020, though the fieldwork is subject to the ability of the Digicel call center to continue to operate their call centers safely and effectively.

Background 1

1.1 Update on COVID-19 outbreak in PNG

Note on recent developments: As of March 2021 there has been a significant surge in confirmed cases of COVID-19 and an uptick in related deaths across PNG.[1] Testing remains limited, and the extent of the latest outbreak is suspected to be more severe than the confirmed numbers suggest. The data collection period for the mobile phone surveys analyzed in this report occurred in December 2020 and January 2021 – prior to the latest widespread outbreak - thus the results presented in this report do not capture the impacts of these recent developments. The following background section aims to provide context to the survey results in this report by highlighting the impacts and response efforts to COVID-19 in PNG as of end-January 2021.

Since the round 1 report,[2] the number of confirmed cases in PNG has grown from 62 to 834, with 54 cases confirmed in the first two weeks of 2021 (as of January 15, 2021). At the time of the round 2 survey there had been 9 COVID-19 related deaths nationwide since the beginning of the outbreak. Of the 22 provinces in PNG, 16 had at least one confirmed case between March 2020 and January 2021, with the highest number of confirmed cases in the NCD (n=365), followed by Western (n=213) and West New Britain (n=156). By comparison, in January 2021 the neighboring Papua Province of Indonesia had a total of 6,118 confirmed cases and 134 deaths. In January 2021 the total number of cases remained comparatively low by international standards; however, the full extent of community transmission was unclear due to the critically low rates of testing nationally, which also limited the capacity for contact tracing or understanding community transmission at the local level. Between March 2020 and January 2021 provincial testing rates ranged between less than 4 tests per 100,000 people to 3,700 per 100,000, with 40,068 cumulative NAT COVID-19 tests nationwide.[3] According to the January 12, 2021 joint *COVID-19 Situation Report* from the PNG National Department of Health (NDoH) and World Health Organization (WHO), West New Britain and the NCD were at Stage 3--large-scale community transmission--where most cases had been acquired locally without being linked to specific locations or clusters.[4] At that time the WHO and NDoH expected that delays to swabbing and receiving test results, and an increase in travel and gatherings over the holiday period, would lead to an increase in the number of cases through January.

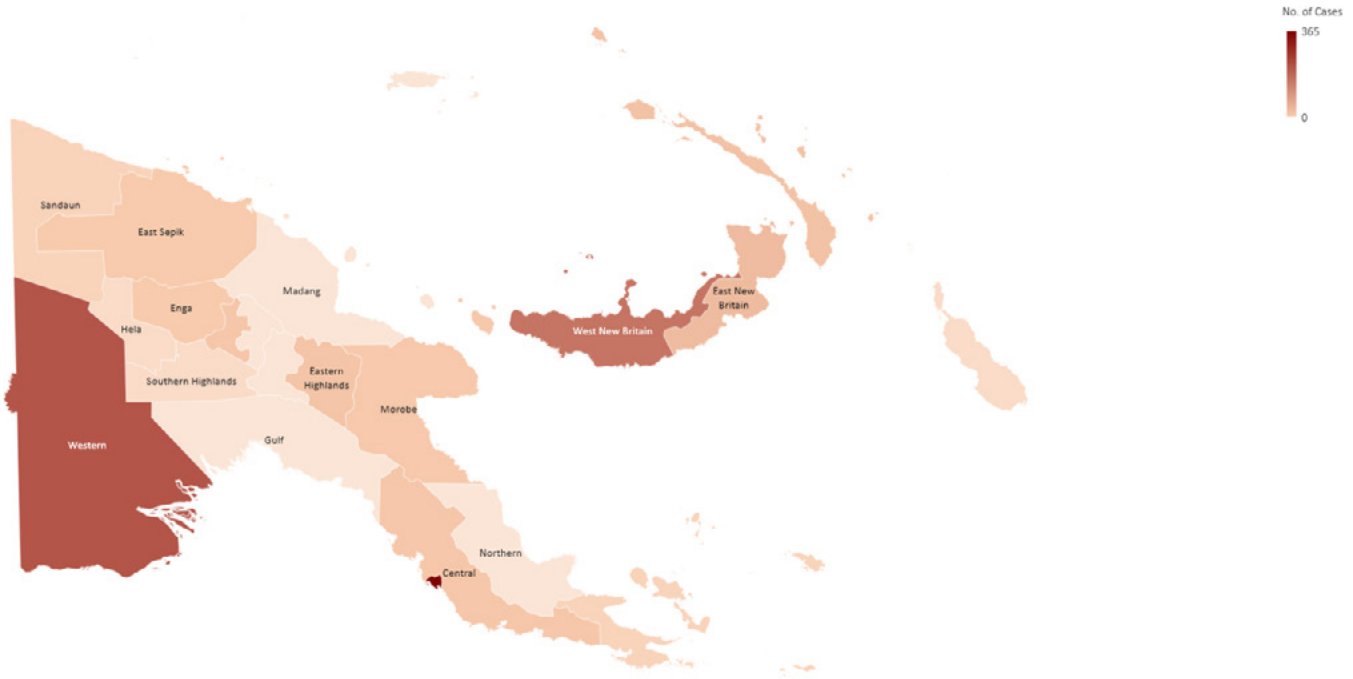
1 As of March 30, 2021, there have been 5,620 confirmed cases and 56 confirmed deaths (COVID-19 Data Repository by the Center for Systems Science and Engineering [CSSE] at Johns Hopkins University)

2 July 27, 2020 – PNG HFPS Report Round 1 (time of writing).

3 NAT (Nucleic Acid Testing).

4 World Health Organization. Papua New Guinea Coronavirus Disease 2019 (COVID-19) – Health Situation Report 55 (Released: 12 January 2021, Report Period 4-10 January 2021).

Figure 1. Confirmed Cases by Province (as of January 15, 2021). Source PNG Official COVID-19 Website.



https://covid19.info.gov.pg/index.php/2021/01/15/western-province-recorded-one-new-covid-19-case-bringing-pngs-total-cases-to-834/. See Table 1 in the appendix for exact figures.

The *National Pandemic Act 2020*, which was passed on June 16, 2020 to provide a legislative mechanism to coordinate the public health response, remains in effect. Under a declaration of a pandemic, the legislation establishes the Office of the Controller as the lead agency to combat COVID-19 and manager of the Joint Agency Task Force of the National Control Centre for COVID-19, granting the Controller the regulatory authority to impose health response measures and oversee their implementation. The health response is guided by the PNG NDoH *COVID-19 Emergency Response Plan*, which provides a framework for emergency health response interventions to be implemented from March 20, 2020 to February 2022 and will feed into the development of the forthcoming health sector plan, the *National Health Plan 2021–2030*. The *COVID-19 Emergency Response Plan* includes COVID-19 response interventions around clinical management services, communications, surveillance, laboratory and operations, procurement and logistics, operational research, and development partner coordination.

In West New Britain, a lockdown was imposed from December 31, 2020 to January 22, 2021 (or until directed by the Controller) following a spike in confirmed cases. Residents of East New Britain were urged not to travel to West New Britain and a 10pm-5am curfew was enforced. Public gatherings, sporting events and cultural activities in West New Britain were suspended, with a few exceptions for essential services such as supermarkets and pharmacies. Restaurants were required to serve take-away only (excluding hotels). Nationally, restrictions on movement and health response measures to combat the disease remained in effect, including, among others, restrictions on international travel and quarantine protocols. Flights into Port Moresby were permitted from Australia, Hong Kong, Japan, and the Solomon Islands. The border with the Indonesian Papua Province remained closed, with traditional crossings by land and water restricted. Physical-distancing measures remained in force and a ban on gatherings of more than 50 people continued with the exception of sporting events, religious gatherings, and marketplaces. A ban on nightclubs and bars remained in effect, with take-away alcohol sales only allowed from Monday to Friday.

Government authorities have responded to risks of the pandemic by approving a fiscal package of emergency health and economic relief measures. In early April 2020, the government mobilized its resources and appealed to development partners and the private sector for additional support to protect the economy and livelihoods of vulnerable households and businesses. The ensuing package of health and economic support measures totaled roughly US$525 million (2.2 percent of GDP) in 2020. Reflecting the government's limited fiscal space and anticipated revenue shortfalls, the health and economic support package was financed by external low-cost loans, foreign grants, and the use of employees' pension savings in superannuation funds in job-loss cases. Commercial banks agreed to provide loan repayment holidays to affected households and businesses for three months. The tax authority provided deferrals for tax filing and payment for two months and prioritized processing of goods and services tax refunds for medical supplies.

International development partners have also increased their support to the health sector response and to bolster the economy. Several support packages have been approved since the round 1 report. In November 2020, Australia approved a AUD$140 million loan to provide additional budget support, which was used to pay-back Government debt owed to PNG businesses and inject cash into local markets. The Asian Development Bank, on November 26, approved a US$250 million loan to support PNG's health services, budget and economy, the agriculture sector, food rations for vulnerable groups, and loans and subsidies for small businesses, in addition to increasing its budget support to the health sector from US$100 million to US$150 million in 2020. PNG has also benefited from a time-bound suspension of its debt services due to Australia,[5] Japan, and Germany[6] under the Debt Service Suspension Initiative, committing the Government to devote its newly freed resources towards the health, economic, and social impacts of COVID-19. Recent developments in the fight against COVID-19 also include the rapid development of COVID-19 vaccines, donor coordination, and financial commitments of the international community to ensure PNG and the Pacific are sufficiently resourced to, once available, achieve high-levels of immunization against the disease. In October 2020, Australia, in coordination with New Zealand, committed AUD$144 million (PKG 374 million) to support a three-year vaccine rollout in PNG through the *Regional COVID-19 Vaccine Access and Health Security Initiative* and the *COVAX Facility – Advance Market Commitment*, and additionally the Government of China has also promised to provide 100,000 vaccines to PNG.

As the situation in PNG continues to evolve, it is critical to continue monitoring both the direct and indirect impacts of the COVID-19. A prolonged health crisis coupled with a struggling economy and limited fiscal space for Government intervention could exacerbate existing development challenges, particularly for the poor and near-poor, and frequent and reliable data are needed to inform government and development partner responses going forward.

1.2 Data Collection

The data collection for the analysis underlying this report was from two surveys: the second round of the high frequency mobile phone survey (HFMPS) conducted by the World Bank and the Social Challenges and Hardship in PNG survey conducted by UNICEF-PNG. As the surveys used overlapping samples, they were analyzed together, and the results are presented in this joint report. For the World Bank survey, as with the first round of data collection, all survey instruments and procedures were designed in accordance with the best practices laid out by the World Bank's COVID-19 methodology and measurement task force.[7] In addition to the information below, further details are provided in the technical appendix and in the round 1 report.[8] The questionnaire and methodology for the UNICEF survey was also reviewed by the Living Standards Measurement Study team at the World Bank to ensure alignment with current international best practices on survey methodology.

5 Australia, Japan and Germany: from 1st May to 31st December 2020. https://clubdeparis.org/en/traitements/papua-new-guinea-20-08-2020/en.

6 Japan and Germany: 1st January to 30th June 2021

7 The five volume best practice methodological guidelines are available at https://documents.worldbank.org/en/publication/documents-reports/documentlist?repnb=148213.

8 The round 1 report is available through the World Bank's Open Knowledge Repository at http://hdl.handle.net/10986/34907.

1.3 Description of Survey Objectives & Instrument

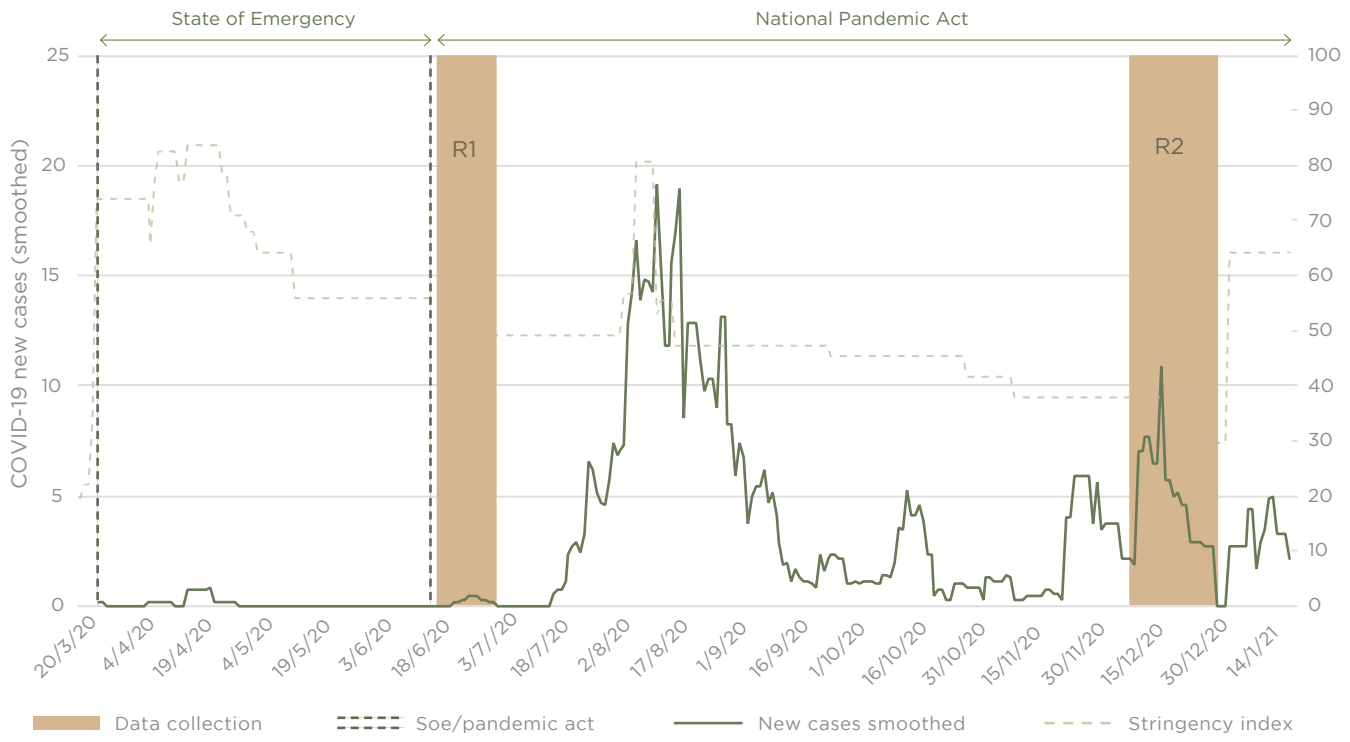
The objective of the second round of the World Bank high frequency mobile phone survey was to measure the continued socioeconomic impacts of COVID-19 in Papua New Guinea, including on livelihoods, food security, and public safety and security. The length of the survey was limited to 15 minutes and the survey instrument consisted of the following modules: Basic Information, Employment and Income Loss, Food Access and Food Security, Health, Public Trust and Security, and Assets and Wellbeing. The questions on employment and income were asked to the respondent and to the household head if different from the respondent. The recall period for current employment was in the previous week. In addition, retrospective questions were asked for new respondents about the baseline ("the start of this year 2020") as well about the situation at the time of round 1 in June ("June, around the time of the Queen's birthday holiday"). The information from the new respondent could then be pooled with the returning respondents to have three consistent points in 2020. For retrospective questions on employment, the baseline is defined as "the start of this year 2020" and new households were asked both about the baseline as well as the situation in early July, corresponding with the implementation of round 1 of data collection. Three subsequent rounds are planned, with the next in May 2021, though the implementation calendar may be revised to respond to changing conditions on the ground.

A companion survey sponsored by UNICEF was fielded on the sub-sample of the round 2 households containing children under age 15. The instrument for this survey included the following modules: Basic Information, Knowledge and Behavior, Service Delivery, Roster of Children Living in the Household (including schooling status), Access to Health, Education, Child Discipline, and Life Perspectives, with the latter three sections being administered specifically about one randomly selected child between the ages of 3 and 14. This survey can be linked to the World Bank survey through household-level identifiers and therefore the two data collections can be analyzed together.

1.4 Methodology and Fieldwork

Field work was conducted through a call center set up by Digicel – Papua New Guinea with a staff of 18 interviewers and one field supervisor. The dates of implementation for the World Bank survey were December 9 through December 31, 2020, and the UNICEF survey was collected between January 6 and January 24, 2021. Data was collected and managed using the Survey Solutions software package. As the objective of the survey was to measure changes as the pandemic progresses, the second round of data collection sought to re-contact all 3,115 households contacted in round 1, though only 1,016 were successfully re-contacted. A small number of round 1 households declined to participate in round 2 (around 3 percent) and some started but did not complete the round 2 survey (around 2 percent). The majority of attrition was due to non-contact. Individual respondents were attempted to be reached up to seven times before the number was abandoned. In 133 cases, the person who answered the phone was not the original respondent but was a member of the original household. These respondents were interviewed and treated as a returning respondent for household level analysis, but not as new respondents for individual level analysis. In an additional 67 cases, the person responding was unaffiliated with the original household. In these cases, if the person responding agreed, they were interviewed but considered a new household. In addition, to reach the minimum of respondents, 1,804 replacement households were added to the survey using Random Digit Dialing targeted based on geography and economic status (further details are provided in the technical appendix), for a total sample size of 2,820 households.

Figure 2. Timeline of daily confirmed cases in PNG, data collection period and stringency index[9] (as of January 18, 2021)



Source: COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University; Oxford COVID-19 Government Response Tracker, Blavatnik School of Government; via Our World in Data.

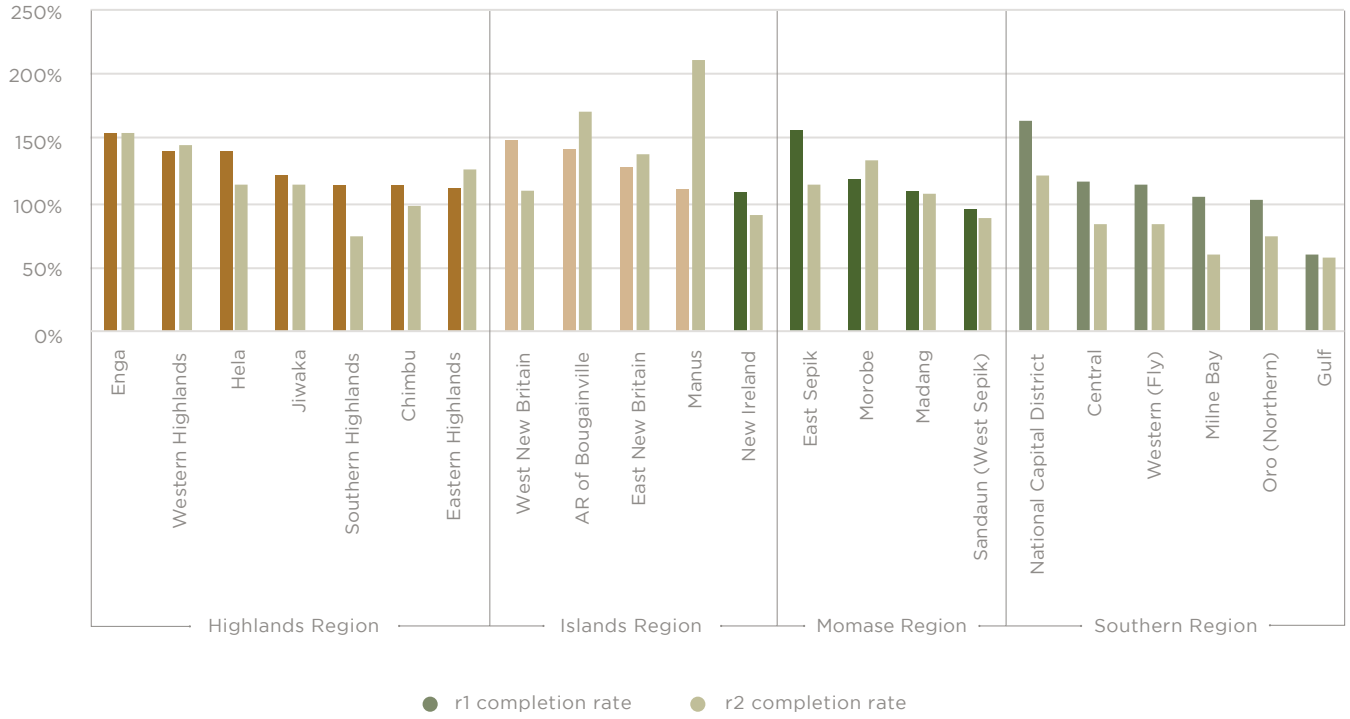
There was substantial overlap between the two surveys. The UNICEF follow-up survey of households with children interviewed 2,449 of the 2,820 households interviewed in round 2 of the World Bank survey: 86.8 percent of the total sample, and 96.6 percent of the total 2,534 that were targeted as having children under age 15. Since the UNICEF survey targeted only households with children, there are some statistically significant differences between the two datasets, mainly in terms of demographics. Households without children were smaller, more likely to have female heads, and the respondent had lower levels of education. Given, however, the small share of these households in total population, the results from the UNICEF survey can be considered largely representative of the national population. The same reweighting procedures were used, and the mean wealth index was close to identical between the two groups. In the report that follows, it is noted where the UNICEF surveys were used. If not explicitly stated, the analysis used the World Bank dataset.

1.5 Re-weighting

Province level sample size targets were generally maintained, with the most substantial losses coming in the Southern region outside of the NCD. As in round 1, the sample design targeted a proportional number of respondents from each province as were interviewed in the 2016-2018 DHS, for a total minimum sample size of 2,500 respondents. Overall, the achieved sample size was above the target in all provinces except for Chimbu (98 percent), Southern Highlands (75 percent) in the Highlands region, New Ireland (90 percent) in the Islands region, Sandaun (88 percent) in the Momase region, Central (83 percent), Western (83 percent), Milne Bay (60 percent), and Gulf (57 percent). Re-weighting was used to adjust for differences between the targeted and achieved sample sizes to mitigate the impact of bias on the analysis. At least one household was interviewed in each of the 89 districts.

9 Note on Stringency Index: A higher score indicates a stricter government response (100=strictest). The stringency index is calculated by OxCGRT using nine specific measures, including school and workplace closures, restrictions on public gatherings, transport restrictions, and stay-at-home requirements.

Figure 3. Share of targeted sample size achieved by province (rounds 1 & 2)



Source: Rounds one and two of the high frequency mobile phone survey.

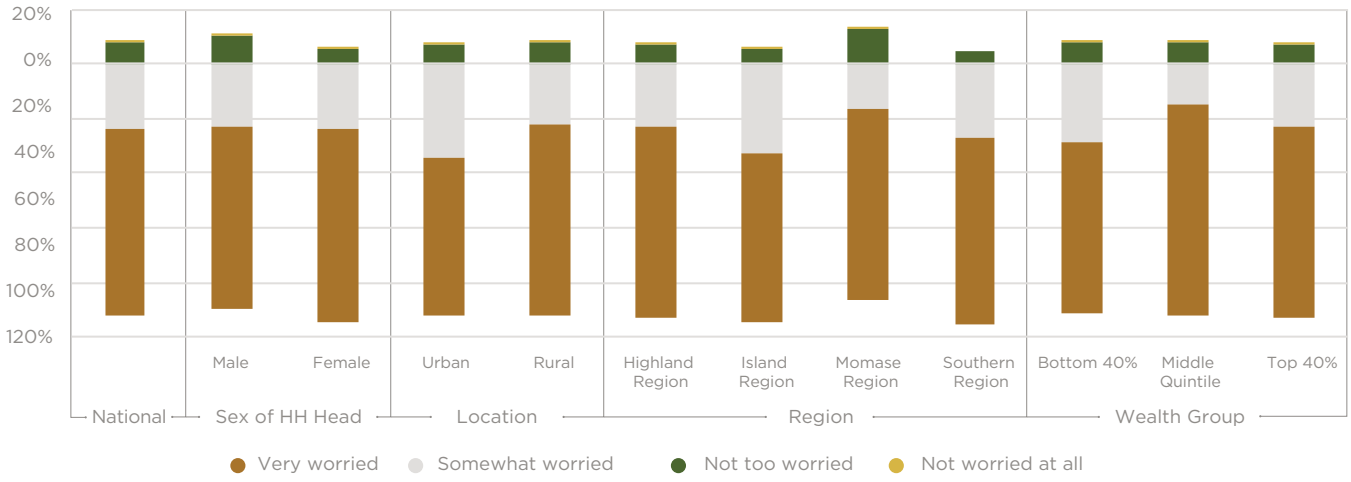
Re-weighting was also necessary in the World Bank survey to adjust for demographic and wealth characteristics of households. As in the World Bank round 1 survey, the respondents tended to be younger, more male, more urban, and more educated than the general population, and their households tended to be higher on the wealth distribution. Further details on the re-weighting techniques used to mitigate the impact of the non-random nature of phone surveys are provided in detail in the technical appendix to this and the round 1 report. One important change implemented in round 2 was to improve targeting for households believed to be more likely to be poor based on their spending and mobile phone usage characteristics. Respondents that did not send or receive text messages were believed to be more likely to be illiterate, which is associated with being poorer. Similarly, respondents that do not buy their own phone credit, but rather receive it from others, are also believed to be more likely to be poor. Further details are provided in the technical appendix, but these techniques were at least partially successful in reducing the bias towards the top of the wealth distribution that was present in round 1.

Re-weighting for the UNICEF survey used similar processes, but the reference population was households with children instead of the population generally. The base weights for the UNICEF survey were those from the second round of the World Bank survey. To account for the differences in the UNICEF sub-sample (households with children under age 15) and the World Bank sample (all households), as well as to mitigate the impacts on differing response rates between the two surveys, the base weights were re-calibrated to population means and total for households with children under age 15 in the 2016-2018 Demographic and Health Survey. In addition, two additional sets of weights were calculated. One set was for the child roster, which took the re-calibrated household weights as a base for each child in the household and then applied an additional calibration for age and sex to align with the DHS demographic profile. This process was repeated for the dataset that collected detailed information on one randomly selected child within the household.

2.1 Concerns regarding COVID-19 on household health

One year into the pandemic, COVID-19 remained a major concern for household health. Nationally, 92.1 percent of the UNICEF survey respondents were somewhat or very worried about their households' health. These results were consistent across demographic and geographic categories, with no significant differences across sex and urban/rural locations. Regionally, 86.8 percent of the respondents in Momase region thought COVID-19 was a threat to their households' health, which was significantly below the average for the other regions (93.0 percent in the Highlands region, 94.5 percent in the Islands region, and 95.5 percent in the Southern region). There were no differences in concern overall across the three wealth groups, but households in the middle quintile were more likely to indicate that they were very worried about their health, 77.4 percent, compared to the 62.7 of the bottom 40 percent and the 69.9 percent of the top 40 percent. Figure 4 below show further detail on the results.

Figure 4. Concern someone in the household might become seriously ill from COVID-19



Source: UNICEF mobile phone survey.

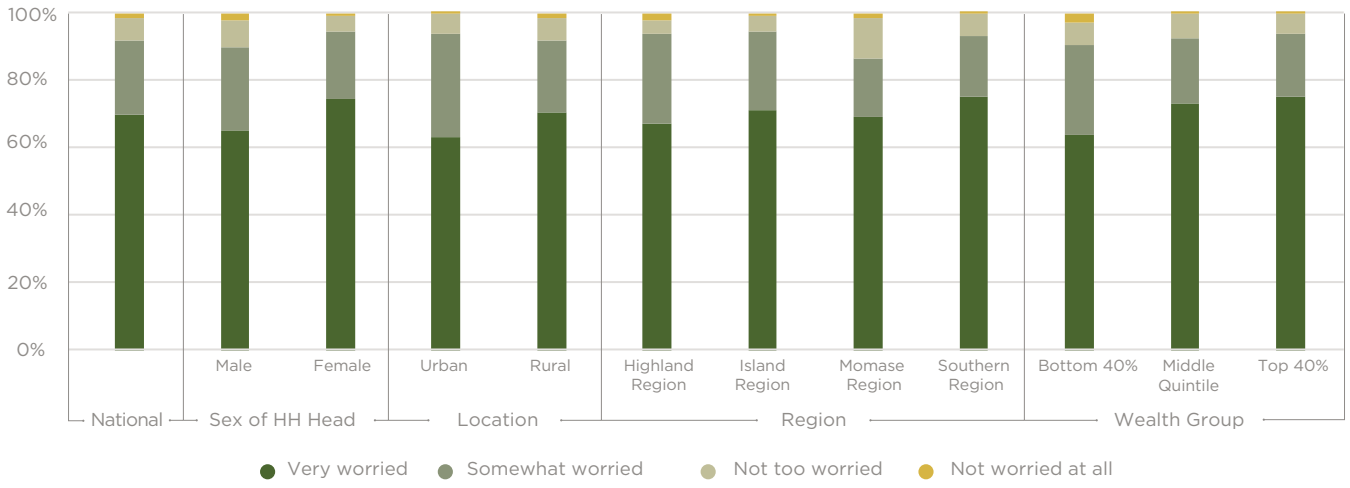
2.2 Financial Anxiety

More than three-quarters of the respondents were somewhat or very worried about their households' finances in the next month, a percentage largely unchanged since round 1. Within the World Bank round 2 survey, this result was consistent across demographic and geographic categories, with no significant differences across sex of respondent or household head, location, or wealth status (see Figure 5 below). Similar to the round 1 findings, those respondents reporting being somewhat or very worried were most prevalent in the Momase region (88.9 percent) and the Highlands region (77.7 percent), and least prevalent in the Southern (64.6 percent) and Islands (67.3 percent) regions. The largest shift between rounds came in the Islands region, which had the highest share of those indicating that they were "very worried" in the first round and the lowest in the second round, though the share of those indicating they were "somewhat worried" increased to keep the overall percentage of households experiencing financial stress basically unchanged between the rounds.

Compared to round 1, financial anxiety has decreased among the bottom 40 percent but remains high. In the first round, 85.6 percent of households in the bottom 40 percent reported being somewhat or very worried about their household finances. This rate has decreased to 77.3 percent in round 2, though the share indicating they were very worried remained largely unchanged between 29.3 percent in round

1 and 34.0 percent in round 2. Anxiety levels in the middle quintile remained largely unchanged since round 1, though the decrease for those in the bottom 40 percent now means the middle quintile was now experiencing the highest levels of financial anxiety, though only by a marginal amount. Financial anxiety for the top 40 percent decreased from 79.8 percent reporting being somewhat or very worried in round 1 to 70.4 percent in round 2. Despite these decreases, overall financial anxiety remains quite high across the country.

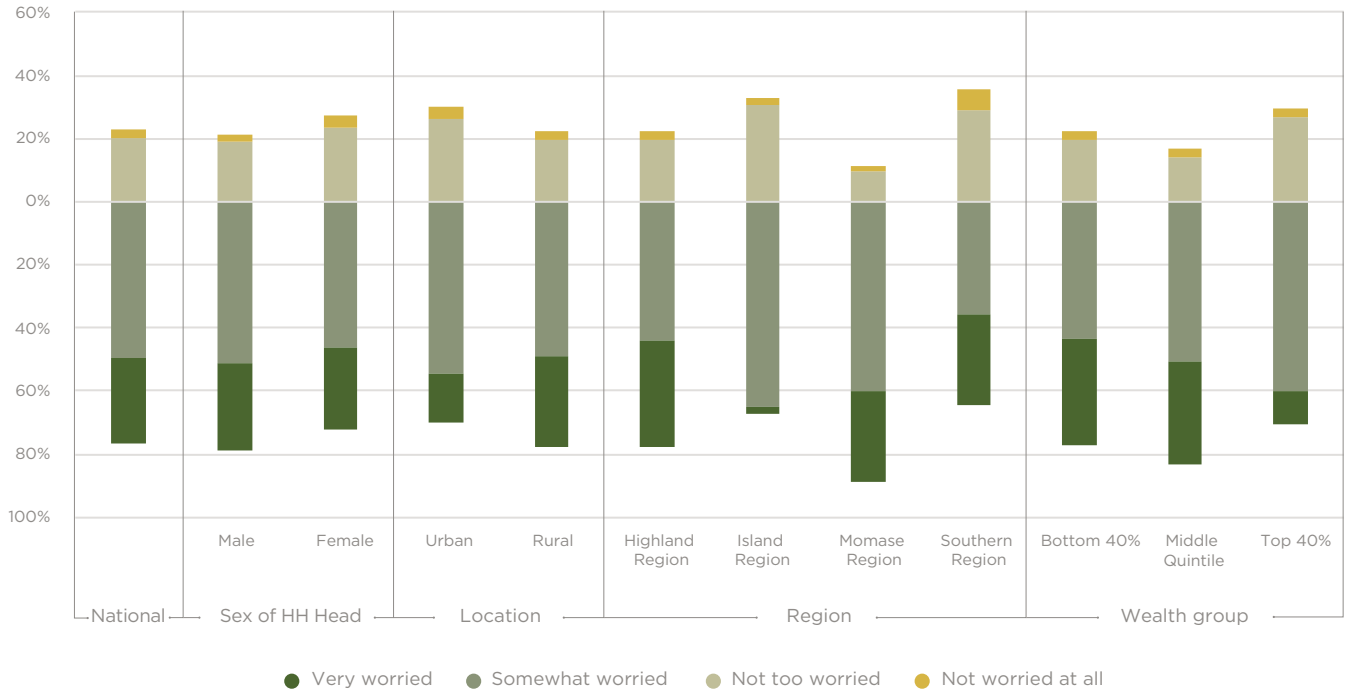
Figure 5: Financial anxiety (by sex, location, and well-being status)



Source: Roundt two of the high frequency mobile phone survey

COVID-19 was seen as a substantial threat to household finances going forward. Without a baseline survey, it is not possible to attribute the levels of financial anxiety seen above directly to the current crisis. Respondents in households with children, however, did overwhelmingly see COVID-19 as a major threat to household finances. Nationally 69.7 percent of UNICEF respondents indicated COVID-19 was a "big threat" to household finances, with an additional 22.4 percent saying it was a mild threat. Only 6.5 percent indicated it was not much of a threat and 1.5 percent said that it was no threat at all. These findings were consistent across demographic and location characteristics. See Figure 6 below for further detail.

Figure 6. Threat of COVID-19 to household finances



Source: UNICEF mobile phone survey.

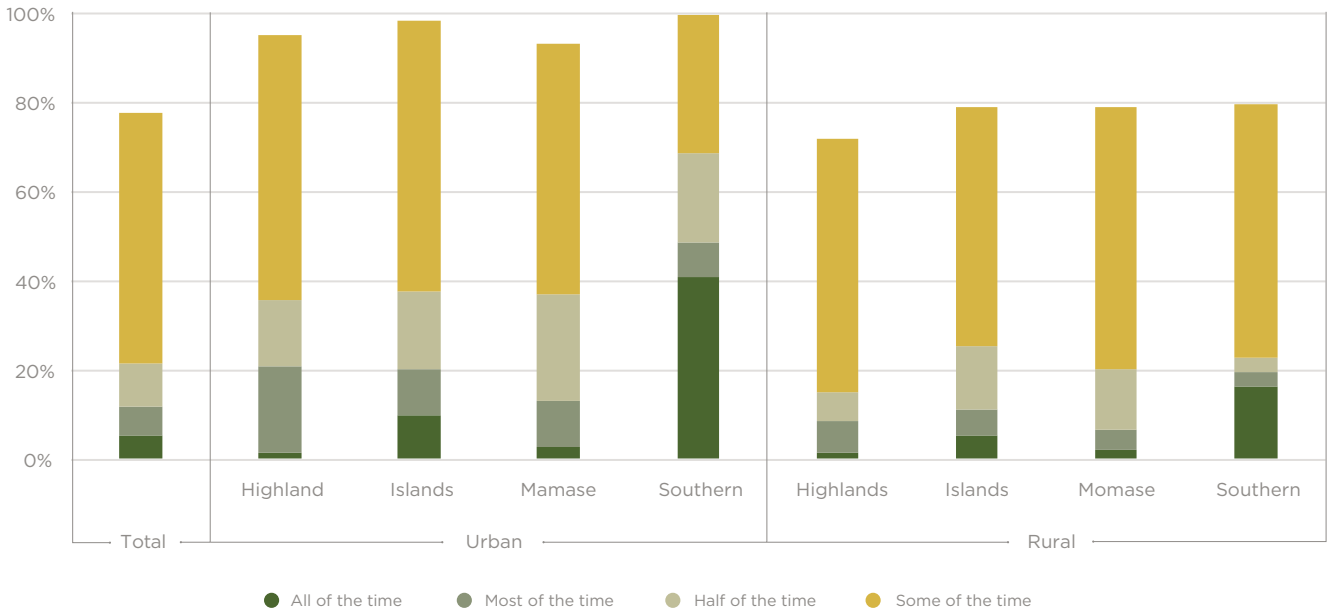
2.3 Protective actions

The majority of respondents indicated changing their behavior in response to the COVID-19 threat. The UNICEF survey asked if respondents had undertaken any of the following actions in the previous week: avoid handshakes or physical greetings; avoid groups of more than 10 people, such as family gatherings, parties, church, funerals, etc.; stock up on food more than normal; reduce the number of times you went to the market or grocery store; and avoid travel in crowded public transport. The vast majority, 85.2 percent, indicated taking at least one of these actions in the previous week. The most common action was to avoid handshakes (43.5 percent), followed by reducing trips to the market (37.0 percent), avoiding large gatherings (33.1 percent), avoiding crowded public transportation (30.0 percent), and stocking up on food (29.4 percent). Econometric analysis, as shown in Table 2 in the appendix, does not show substantial variation across the methods in terms of the characteristics of the respondent. Women were less likely to reduce their trips to the market or grocery store, but no more likely than men to undertake any of the other actions or collectively any of the 6. People with no education or only primary or below were more likely to avoid handshakes and to use one of the 6 methods overall, and people with no education were more likely to avoid public transportation. In terms of geographic impacts, those living in urban areas of the Highlands and Momase regions were less likely to avoid handshakes than those in urban areas of the Southern region; those in both urban and rural areas of the Islands region, as well as rural areas generally, were more likely than those in the urban Southern region to avoid large gatherings, stock up on more food than normal, and make fewer trips to the market. There were no significant impacts on the use of crowded public transportation by geography and those living in urban areas of the Highlands region were less likely overall to use any of the 6 actions. There were limited wealth effects, with only weakly significant results on households in the bottom 40 percent being less likely to avoid large gatherings. Overall, however, the explanatory power of these models was very low, indicating that the decision to undertake various measures was largely a personal decision. It also demonstrates that potential economic concerns, like the inability to stock up or store food long term or avoid public transportation, did not appear to be systematically related to the use of protective measures.

More frequent handwashing was more common than mask wearing, but both were mainly confined to the NCD area.[10] Nationally, 77.8 percent of the UNICEF respondents indicated washing their hands with soap at least occasionally after being out in public over the seven days prior to the survey, but there was substantial variation across region and urban/rural locations, with 99.4 percent of respondents in the urban areas of the Southern region, including the NCD, washing at least some of the time, compared with 71.9 percent of respondents in the Highlands rural areas. In addition, the frequency of handwashing was generally higher in urban areas, and in the Southern region specifically. Econometric analysis did not show any further statistically significant relationships with the sex or education of the respondent, or the respondent's household wealth group, but the geographic findings were robust. Regarding the frequency of mask wearing when in public, the share was highest in urban areas of the Southern region, 81.1 percent, compared with only 32.1 percent in the Momase rural region. In the urban areas of the Southern region, 36.6 percent of respondents indicated wearing a mask all of the time compared to 5 percent or less in the other areas. In this case, econometric analysis demonstrated that women wore masks less frequently than men but did not indicate other significant relationships beyond geography. See Figure 7 and Figure 8 below for further detail on handwashing and mask wearing, respectively, and Table 3 in the appendix for the full results from the ordered logit regressions.

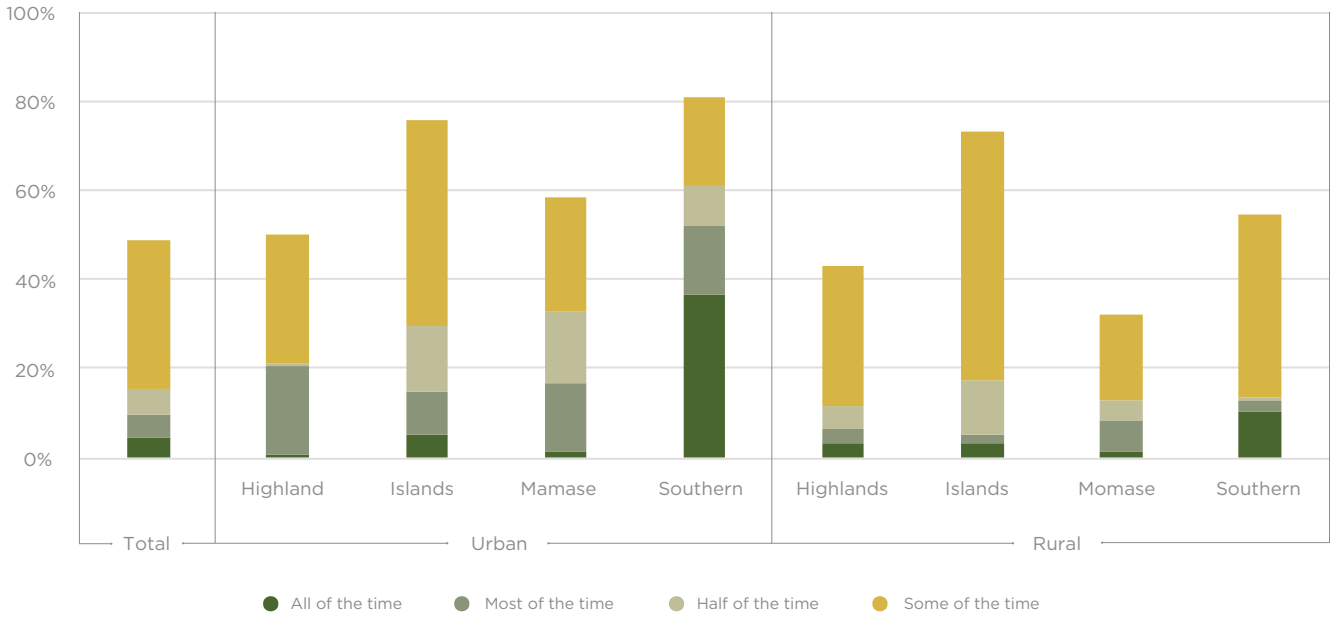
10 These results exclude a small share of respondents (less than 5 percent nationally and less than 10 percent for any subgroup) that indicated they had not gone out in public in the previous week.

Figure 7. Practice of handwashing after being in public (by location)



Source: UNICEF mobile phone survey.

Figure 8. Practice of mask wearing in public (by location)



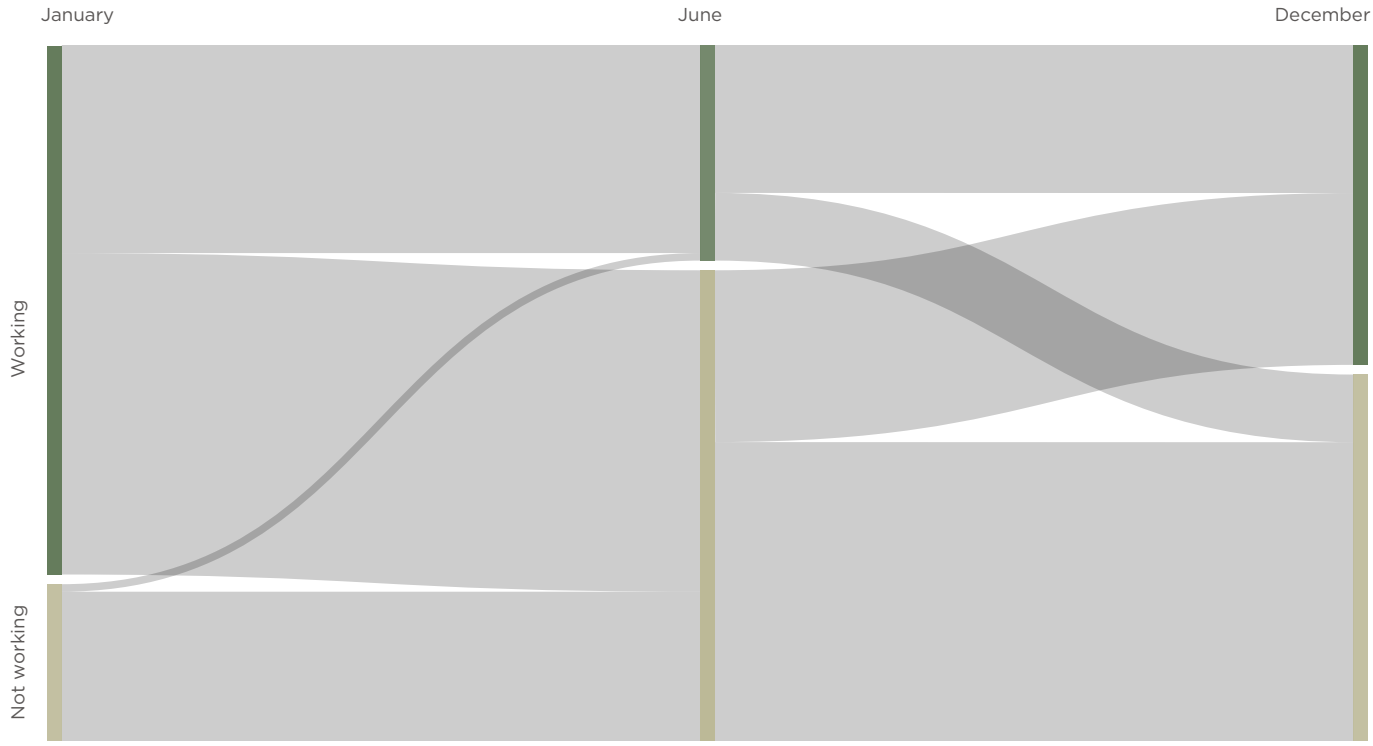
Source: UNICEF mobile phone survey.

Awareness of government measures to address COVID-19 on healthcare and education were universally high. Nationally, 90.7 percent of the UNICEF survey respondents were aware of government measures to address the impact of COVID-19 on healthcare, with a near identical percentage aware of the measures to address the impact of COVID-19 on education and schooling. Neither descriptive statistics nor econometric analysis showed any significant variation across geography or demographic characteristics.

3.1 Employment

Though there has been some recovery in employment since June, there remains about a 28 percent loss in total employment between January and December 2020. According to the round 2 dataset, 67.1 percent of respondents reported working in the January baseline, compared to 38.3 percent at the time of round 1 in June and 47.8 percent at the time of round 2 in December.[11] Of the total population, 31.4 percent reported being employed in all three periods with 30.2 percent reporting not working in any of the three periods. The remaining 38.4 percent transitioned into or out of work at least once over the course of 2020. Of those that stopped working between June and December, the main reason cited was seasonality, mainly due to the agricultural calendar. Less than 1 percent cited COVID-19 restrictions, which may be unsurprising given that formal "lockdowns" in this period were generally short and confined to specific areas. Both between the baseline and round 1, as well as between round 1 and round 2, there was minimal switching of activities, with approximately 95 percent of those employed in both periods remaining in the same main activity. Figure 9 below shows the movement between work status across the three rounds.

Figure 9. Change in work status by round

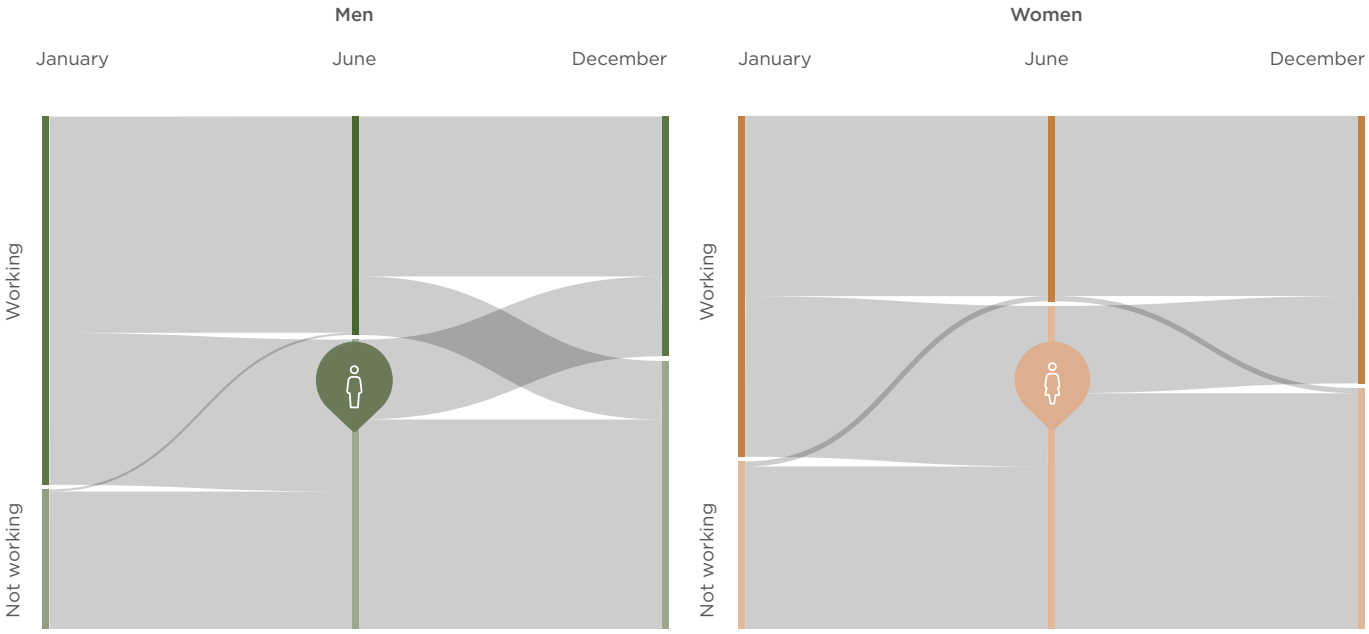


Source: Rounds one and two of the high frequency mobile phone survey.

11 The percentages reported in this report differ from the estimates from the round 1 report because of the high turnover in respondents between the two rounds and subsequent replacement with new respondents. Those respondents in both round 1 and round 2 were asked a follow-up question about their employment status in January 2020 during the June 2020 round as well as their current status in both June (in round 1) and December (in round 2). For those respondents that were new in December, they were asked retrospective questions about both January and June, and then their current employment status in December. The weighted percentages for January are very close to the round 1 estimates but the June estimates are outside the margin of error indicated by the confidence interval for round 1. In round 1, 66.8 percent reported working in January (CI: 60.2, 73.3) and 53.5 percent (CI: 46.3, 60.6) reported working in June. In round 2, 67.1 percent reported working in January (CI: 60.3, 73.9), 38.2 percent reported working in June (CI: 31.4, 45.1), and 47.8 reported working in December (CI: 40.9, 54.8). It is not possible to tell which set of statistics is more accurate in the absence of a recent representative baseline survey. The improved coverage of the poorest deciles in round 2 could be considered to be more likely to reflect the true situation of employment. Alternatively, since there was a substantial recall period for the June statistics that were reported in the December data collection, there could be recall error in those measures. Regardless, however, both new and returning households showed the same pattern in overall employment: a sharp decline between January and June, followed by a partial recovery between June and December.

Differing trends in employment were observed between men and women between June and December, with women experiencing a more consistent recovery, though starting from lower participation rates. Between January and June, substantial portions of both men and women reported stopping working, 41.3 percent and 47.1 percent respectively, with minimal offset of those previously out-of-work joining the workforce. From January to June and then to December, there was a net loss of 59.3 percent of the male baseline workforce between January and June, followed by a net gain of 5.8 percent of male baseline workforce by December, for an overall change over 2020 of 34.9 percent. For women, there was a net loss of 54.4 percent of the female baseline workforce between January and June, followed by a net gain of 24.1 percent of female baseline workforce by December, for an overall change over 2020 of 21.5 percent. Women had lower baseline participation, however, 62.8 percent, compared to 71.3 percent for men. Figure 10 below shows the transitions by round. The difference in these trends may be related to the differing nature of work between men and women. The two main reasons that men cited for stopping work between rounds 1 and 2 were that their business or place of employment was closed for a reason not directly related to the COVID-19 restrictions and because it was not farming season, indicating both seasonality in employment as well as potentially more long term economic impacts of a declining economy. For women, a larger proportion were involved in agriculture and retail and market activities. Most of the losses in these two activities took place in the first part of 2020, with substantial recovery particularly in retail as stores and markets reopen.

Figure 10. Change in work status by round (by sex)



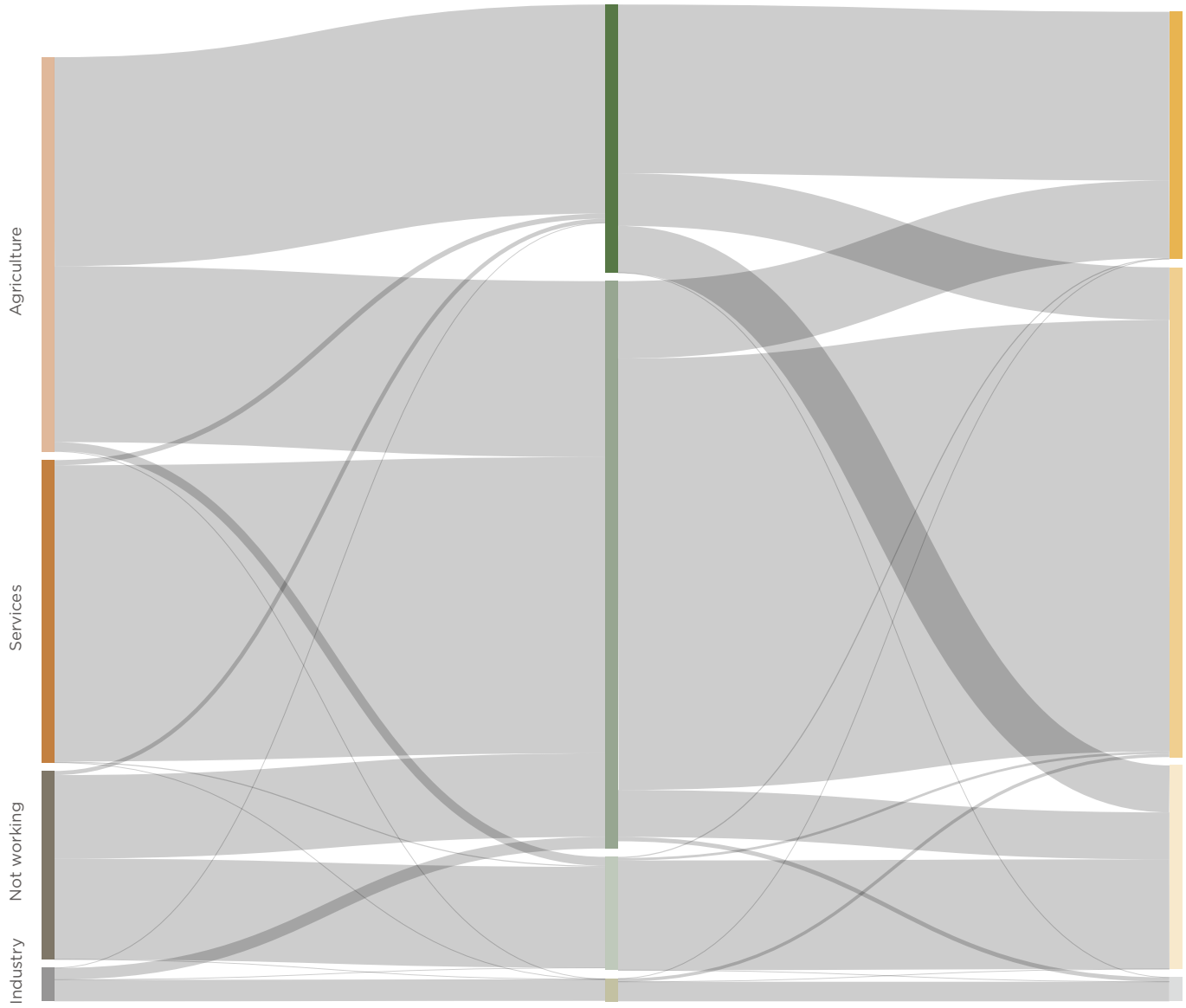
Source: Rounds one and two of the high frequency mobile phone survey.

The agricultural sector had the highest net loss in jobs in 2020. The net loss in agriculture was 37.3 percent of the baseline workforce over the course of the year, compared with 28.6 percent in industry and 16.1 percent in services. Of those working in agriculture at baseline, 42.3 percent indicated working in all three periods, while 25.4 percent remained out of work in December after stopping between January and June and a further 13.1 percent had stopped between June and December. The remaining 19.2 percent that stopped working between January and June had resumed activities by December.

The service sector showed both the most resilience as well as the strongest recovery. Of those working in services at the baseline, 54.6 percent remained working through all three periods and 24.4 percent had stopped working in June but had resumed by December. Of the remainder, 19.9 percent had stopped working between January and June and had not resumed as of December, while 1.1 percent had stopped working between June and December. The overall change was therefore a 16.1 percent decline. Within the service sector, those engaged in retail and trading were both most likely to remain working across all three periods as well as return to work between June and December. Those engaged

in professional, scientific, and technical activities were also likely to remain working and rejoin between June and December, and those working in public sector jobs such as education and health care, were also more likely to rejoin by December, though both groups to a much lesser extent than retail. Of the limited share (3.6 percent) of the workforce in industrial activities at the baseline, most (55.8 percent) remained working in all three periods, with a further 12.6 percent stopping by June and having resumed by December. Of those not working in December, 22.2 percent stopped between January and June and 9.4 percent between June and December. Also, as shown in Figure 11 below, while there was substantial movement into and out of work within sectors, there was little evidence of switching between sectors.

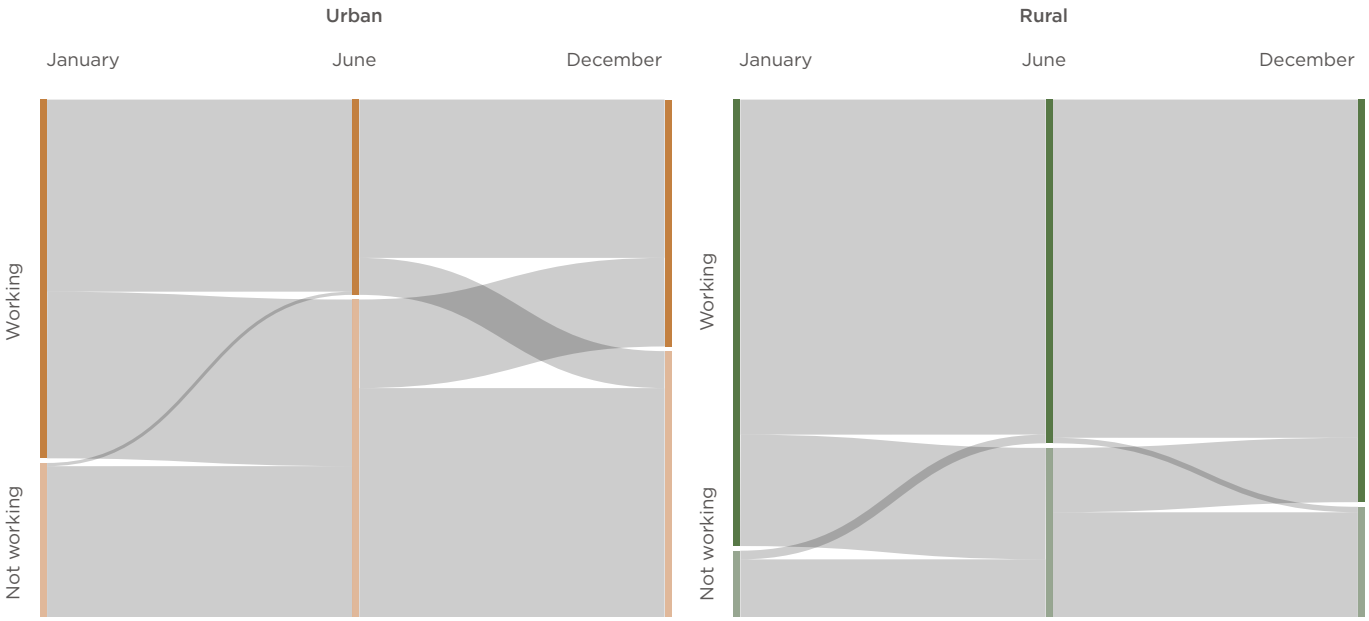
Figure 11. Change in work status by round (by sector of employment)



Source: Rounds one and two of the high frequency mobile phone survey.

Recovery in urban areas has been stronger than in rural areas. In urban areas, there was a decline of 23.0 percent of the baseline workforce between January and June, followed by a recovery of 13.2 percent between June and December, for a net decline of 9.8 percent of the baseline workforce over 2020. In rural areas, the initial decline was 45.5 percent of the baseline workforce between January and June, followed by 14.4 percent recovery between June and December, resulting in a net decline of 31.2 percent of the baseline workforce. The declines in the rural areas are consistent with those seen in the agricultural sector, which is the main source of livelihood in the rural areas.

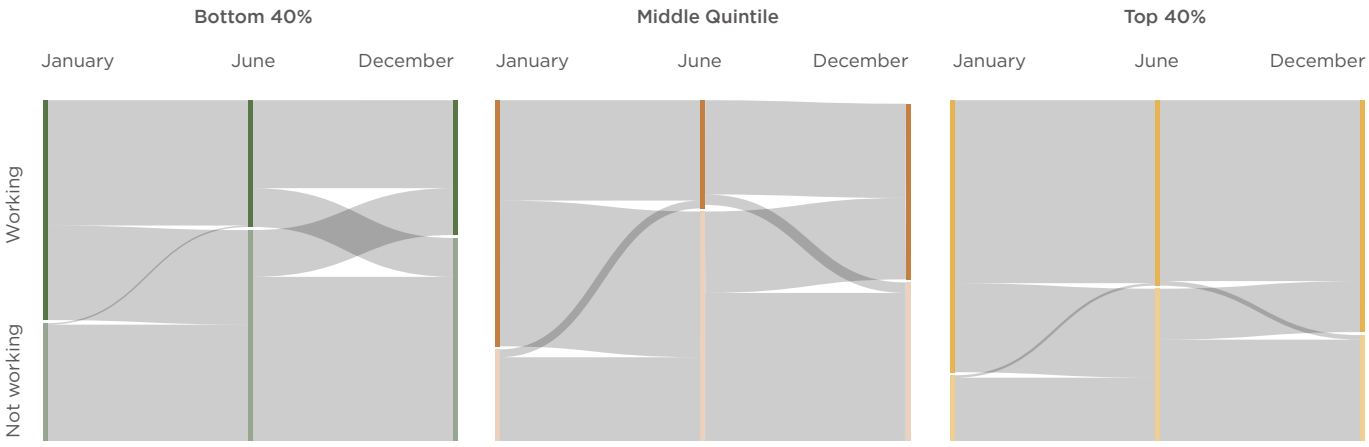
Figure 12. Change in work status by round (by location)



Source. Rounds one and two of the high frequency mobile phone survey.

Employment of those in the bottom 40 percent has recovered more slowly than other groups. Though the initial decline in employment was most acute for the middle quintile between January and June, a loss of 57.5 percent of the baseline workforce compared to 42.3 percent in the bottom 40 percent and 31.8 percent in the top 40 percent, the bottom 40 percent have returned to work at a slower rate. Between June and December, there had been a net increase of 3.9 percent of the baseline workforce for the bottom 40 percent, compared to a 28.8 percent increase for the middle quintile and a 17.1 percent increase for the top 40 percent. Overall, there has been a 38.7 percent net decline in employment from January to December for the bottom 40 percent, compared with a 28.6 percent decline for the middle quintile and 14.8 percent for the top 40 percent. This finding is particularly concerning since the percent of those in the bottom 40 percent working in January was the lowest of the three groups and the bottom 40 percent are least likely to have sufficient resources to sustain the household for extended periods of unemployment. Figure 13 below shows the change across the three periods for each group.

Figure 13. Change in work status by round (by wealth group)



Source: Rounds one and two of the high frequency mobile phone survey.

Econometric analysis showed no statistically significant effects for stopping working beyond province-level effects. Three employment outcomes were considered: stopping working or working for no pay if working at baseline, working for lower pay in round 2, and working for higher pay in round 2. The control variables were sex of respondent; status of the respondent as the household head, with an interaction

term; sector of employment (agriculture, industry, or services); whether currently working respondents were working full or part time; whether currently working respondents were in the formal sector (as defined by having a written contract for their job); education level; and rural/urban location of the respondent in round 2. The models are estimated with and without province-level fixed effects. None of the respondent characteristics are statistically significant in considering who has stopped working except for province level effects for Chimbu Province, Enga Province, Southern Highlands Province, Manus Province, and the Autonomous Region of Bougainville, all of which were more likely to be not working compared to the reference of the NCD. Table 4 in the appendix shows the full results.

3.2 Employment Income

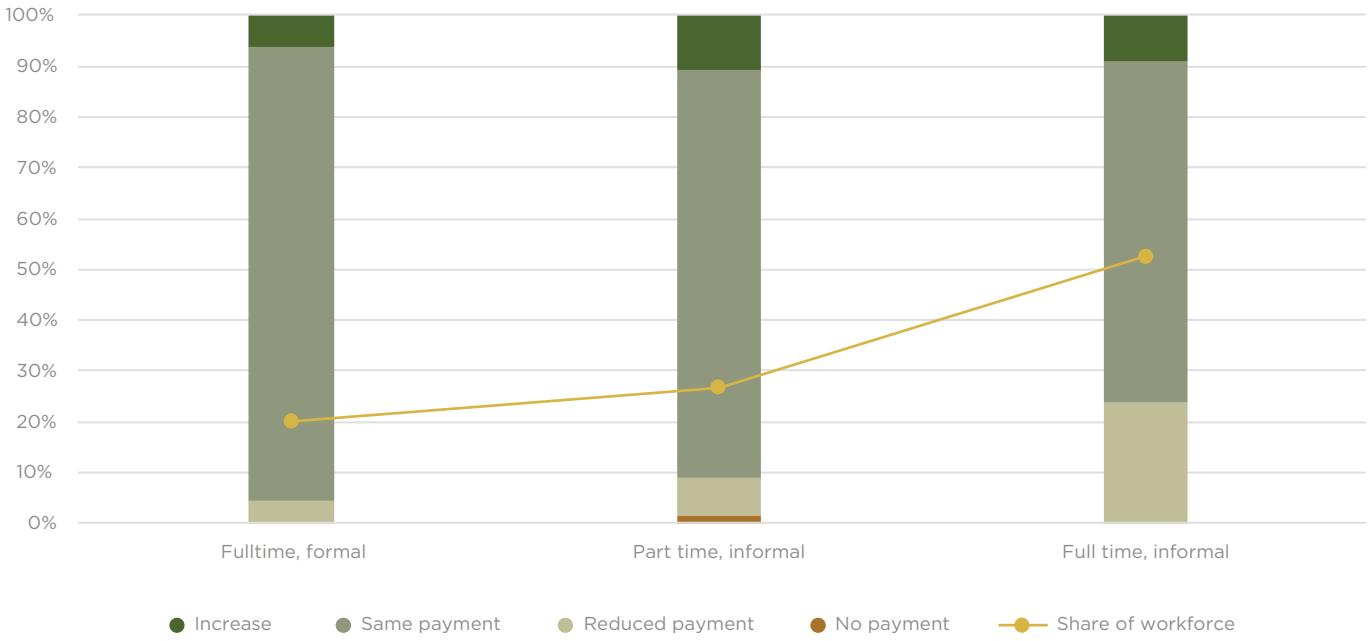
Employment income has rebounded across all groups and categories, with the largest gains coming for those in the top 40 percent. Nationally in round 2, the majority of respondents who were still employed reported receiving the same income as usual in the past week, 75.3 percent, compared to 46.0 percent in round 1. The shares which received decreased income and no income in round 1, 45.9 percent and 4.5 percent respectively, decreased in round 2 to 15.3 percent and 0.5 percent, respectively, while those reporting higher income increased from 3.7 percent in round 1 to 8.9 percent in round 2. Though there were no substantive differences between men and women, or between the agriculture or service sectors, there was a marked improvement for the small share of the workforce that worked in industrial activities. The most significant differences came between the top 40 percent and the rest of the population, 16.8 percent of which have seen increased income compared to 4.3 percent across the lower three quintiles. See Figure 14 below for further detail.

Figure 14. Changes in usual income between rounds 1 and 2

Source: Rounds one and two of the high frequency mobile phone survey.

Full time informal sector workers, which includes most workers in the bottom 40 percent and the middle quintile, were most likely to see reductions in pay if still working. Though most still-employed workers were working for the same pay, there were greater impacts for those in the informal sector, which includes subsistence agriculture as well as those self-employed in the farm and non-farm sectors. Of the 20.2 percent of the workforce in full-time formal employment in December, 89.4 percent were working for the same payment and 6.1 percent had seen an increase in payments, compared with 4.4 percent that had seen a decrease. In the part-time informal sector, which comprised 26.6 percent of the workforce, 80.1 percent were working for the same wages, while 10.8 percent had seen an increase and 7.4 percent had seen a decrease. Finally, for the largest sector of the workforce, the 52.6 percent working full time in the informal sector, 67.2 percent were working for the same pay and 9.1 percent had seen an increase, but 23.6 percent had seen a decrease. Figure 15 below illustrates these shares graphically. These results continue to highlight the increased vulnerability risks for the poor and middle quintile, as 71.5 percent and 53.3 percent, respectively, work full time in the informal sector, while full-time formal employment was the most common category for the top 40 percent.

Figure 15. Changes in payment and share of workforce by full time and formality status



Source: Round two of the high frequency mobile phone survey.

Econometric analysis showed those in the bottom 40 percent and middle quintile, those with no education, and those in the informal sector were more likely to be working for reduced wages if still employed. Conditional on still being employed, household heads, those in the bottom 40 percent and those in the middle quintile, and those with no education, and those working without a formal contract, as well as those living in the NCD, were more likely to be working for lower pay. Male non-household heads and those in urban areas were more likely to be earning higher wages, while female non-household heads, those with no education, and those living in the NCD were less likely.

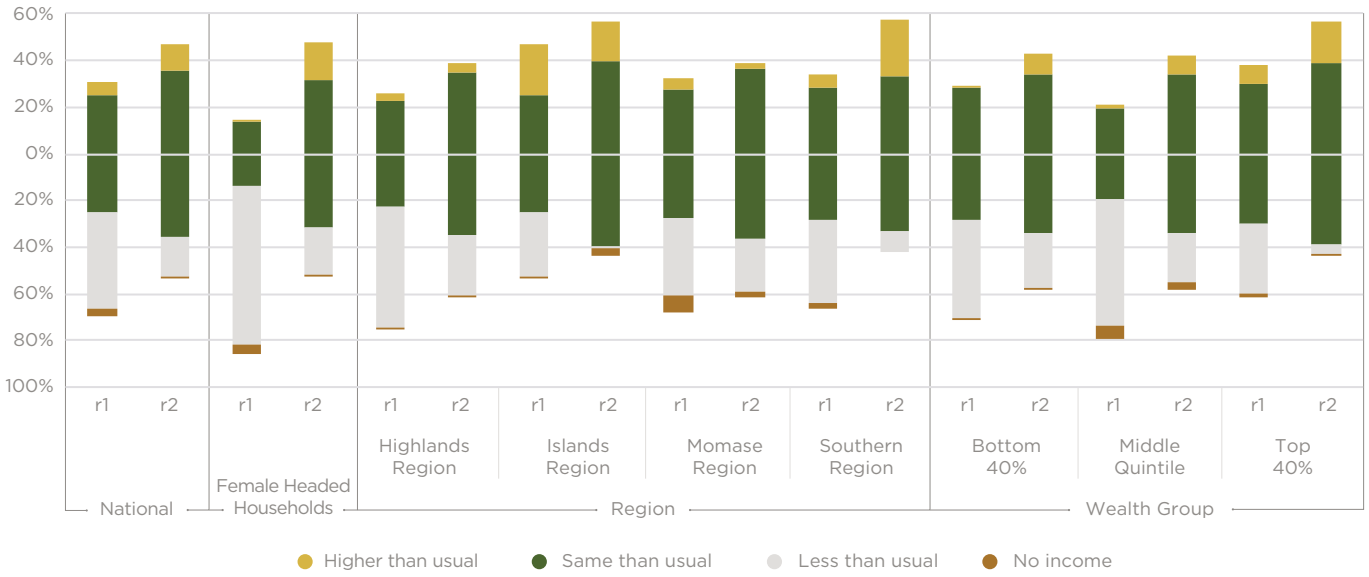
3.3 Non-Farm Business[12]

Income from non-farm enterprises rebounded between June and December. In round 1, of those operating a non-farm enterprise, 50.6 percent received roughly the same level of income in the month prior to data collection compared to the start of 2020, with 5.5 percent reporting higher incomes, 41.2 percent reporting lower income, and 2.8 percent of the total reporting no income. In round 2, 71.0 percent of non-farm business reported income in the last month that was compared to the start of 2020 and 11.2 percent reported higher incomes. Of those reporting lower incomes, 16.7 percent reported reduced income and 1.2 percent reported no income. As shown in Figure 16, this trend held across geography, household demographics, and wealth groups. The most significant changes were for female headed households,[13] of which the percentage reporting lower or no income in the last month dropped from 71.9 percent in round 1 to 20.7 percent in round 2, and for the middle quintile, which dropped from 59.8 percent to 23.7 percent. The reasons for the improved rates of recovery for female-headed households and those in the middle quintile were not clear from the survey. One possible hypothesis is that these groups were more likely to have businesses which work in markets, many of which reopened between June and December.

12 As with the employment comparisons, there is some concern about comparability with the round 1 estimates because of the high turnover in respondents between the two rounds and subsequent replacement with new respondents. In round 1, 27.4 percent of households report operating a non-farm business in 2020, with a slightly higher prevalence in urban than rural areas, 33.7 percent compared to 26.7 percent, respectively. In round 2, 30.0 percent (CI: 24.4, 35.6) reported having a non-farm enterprise, with 46.3 percent (CI: 32.6, 59.9) of urban households and 28.2 percent (CI: 22.4, 34.2) of rural households. The higher prevalence in urban areas raises some concern, but the figure was still within the margin of sampling error.

13 For the purposes of this analysis, the results are disaggregated into male and female-headed households because female-headed households may be considered a vulnerable group as compared to male-headed households. It is not a comparison of differential impacts by gender because comparing the outcomes of male and female household heads will not measure the differences in the consequences of the pandemic on men and women in the population.

Figure 16. Change in income from non-farm enterprise in last month compared to start of 2020 (round 1 and round 2)



Source. Rounds one and two of the high frequency mobile phone survey.

Despite overall progress in the second half of 2020, the recovery has been uneven. Compared to the bottom 40 percent and the middle quintile, the top 40 percent have substantially lower levels of reduced and no income from non-farm enterprise, as well as a higher incidence of higher than usual incomes (though the latter was not statistically significant due to limited sample sizes). Similarly, approximately one-quarter of non-farm enterprises in the Highland and Momase regions have lower or no income, compared to 9.2 percent in the Southern region and 3.6 percent in the Islands region. Finally, though the gap between male and female headed households has narrowed substantially since round 1, female-headed households were still more likely to have lower or no income (20.7 percent) from their non-farm enterprise compared to male-headed households (14.3 percent).

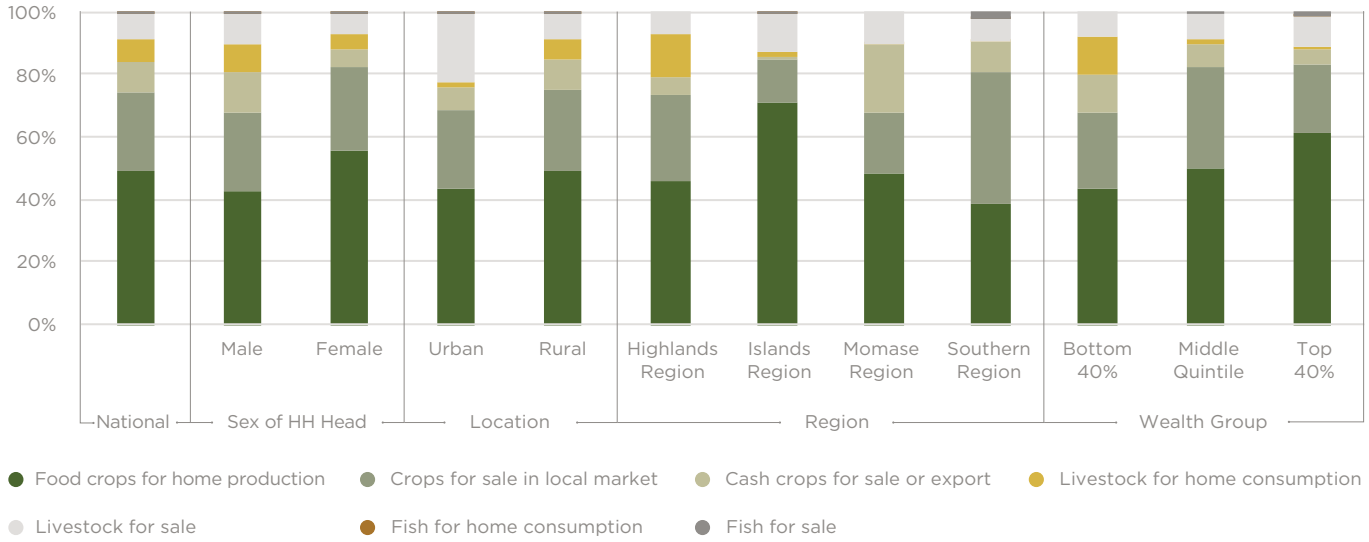
3.4 Agriculture

Since agriculture is the main sector of employment for rural residents, women, and those in the bottom 40 percent, understanding the impact of COVID-19 on agricultural activities is critical to understanding its impact on poor and vulnerable groups.[14] Nationally, 70.8 percent of households participated in agricultural activities in the month prior to the survey, and more than 96.3 percent of households were able to perform agricultural activities normally a month before the survey. In terms of the composition of agricultural activities, the production of food crops primarily for home consumption was the most common main agricultural activity for households, cited by 48.8 percent of agricultural households, followed by the production of crops for sale in local markets, which was cited by 25.8 percent of agricultural households. Other main activities included the production of cash crops for sale (9.5 percent), production of livestock for sale (8.5 percent), production of livestock for home production (7.0 percent), and fishing for sale (0.5 percent), with a negligible share citing fishing for home consumption.

There was some variation in primary activity across agricultural households. Using econometric analysis that holds all other factors constant, female-headed households were more likely to cite production of food crops for home consumption as their main agricultural activity, and less likely to cite production of cash crops for export, livestock for home consumption, or fish for sale. Households in the bottom 40 percent were slightly more likely to cite production of cash crops and raising livestock for home consumption. Across the regions, households in the Momase region were more likely to cite the production of cash crops and those in Momase and the Southern region were less likely to cite the production of livestock for home consumption. See Figure 17 below for summary descriptive statistics of the main agricultural activities across household characteristics.

14 See round 1 report for further details: https://openknowledge.worldbank.org/handle/10986/34907

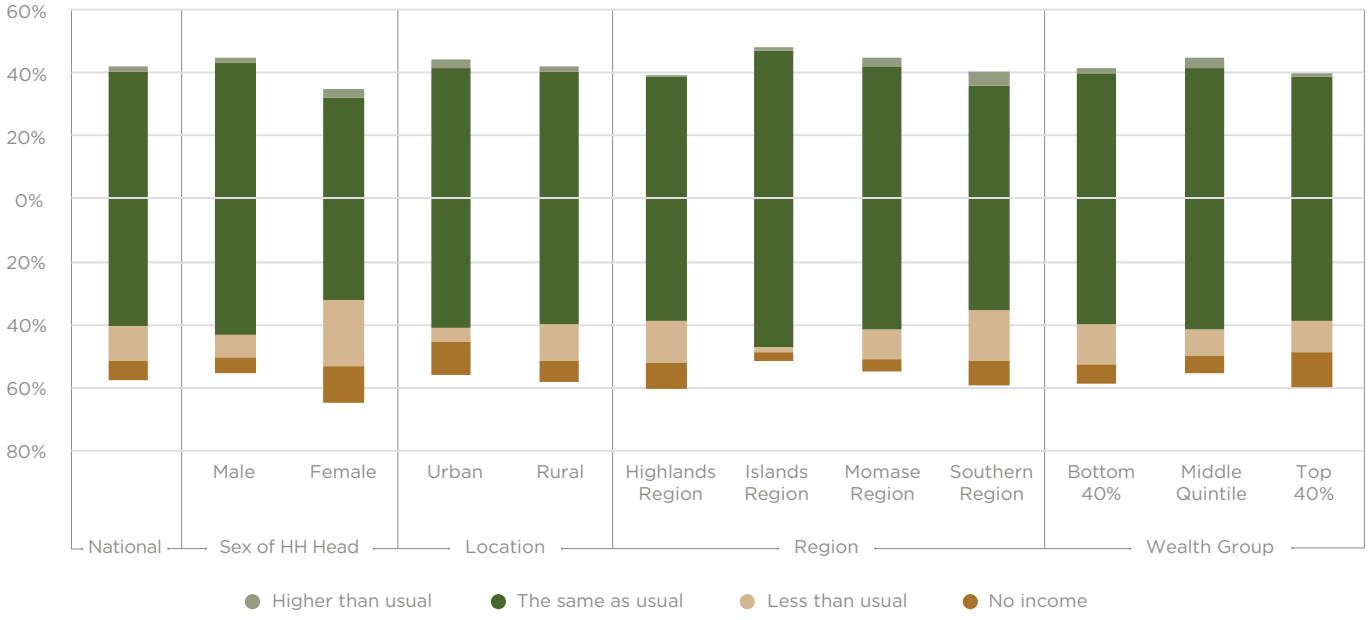
Figure 17. Main Agricultural Activity



Source: Round two of the high frequency mobile phone survey

Though most households expect the same income from agricultural activities, female headed households continued to disproportionately expect lower or no income from agriculture. Overall, 82.2 percent of households expect to see higher or the same income from their agricultural production in the current growing season compared to the last growing season, as shown below in Figure 18. There was limited variation between urban and rural areas, with 17.7 percent of rural households and 14.6 percent of urban households expecting to see less or no income from their agricultural productions. Households in the middle quintile of the distribution were slightly less likely to expect lower earnings from agricultural production, 13.7 percent, compared to 21.4 percent of those households in the top 40 percent of the wealth distribution and 18.3 percent in the bottom 40 percent. Female-headed households continue to expect the most serious impacts, however, with 32.7 percent expecting lower income compared to 11.9 percent of male-headed households, a finding which was robust to multivariate analysis.

Figure 18. Expected Agricultural Earnings



Source: Round two of the high frequency mobile phone survey

Nearly all agricultural households consumed at least part of their production, and the majority also sold their products in local markets. Of agricultural households, 80.9 percent produced for home consumption and 61.5 percent sold their products in local markets. Econometric analysis indicated that rural households were more likely to produce only for home consumption, but that no other household characteristics were significant, including sex of household head, wealth status, and region. Of those households in the middle quintile of the wealth distribution, 80.1 percent produce crops for sale, compared to 51.3 percent of households in the bottom 40 percent and 62.5 percent of households in the top 40 percent. Across the regions, 56.0 percent of households in the Highlands region, 68.7 percent of households in the Islands region, 64.5 percent of households in the Momase region, and 61.5 percent of households in the Southern region produce crops for sale in the local market. Econometric results confirm those in the middle quintile were nearly 20 percent more likely to do so than the top or bottom 40 percent, but no other characteristics were significant.

There was minimal evidence of higher demand for agricultural products despite the potential increased prices and decreased availability of imported foods due to COVID-19. One hypothesis on the impact of COVID-19 on agricultural households was that some may benefit from substitution between imported and locally produced foods if prices for imported food increased or availability declined. Though there was no evidence of availability constraints and no reliable disaggregated data exists on changes in retail prices, respondents who sold at least some of their agricultural production were more likely to report declines than increases in demand for their products, which would be more attributable to income impacts if households were purchasing less food due to lack of resources. Overall, only 2.1 percent of households indicated higher demand for their agricultural products than previously, and there was no statistically significant relationship between households indicating higher demand and household or geographic characteristics. The vast majority, 77.4 percent, indicated that demand for agricultural products had remained unchanged, while 19.3 percent indicated demand had decreased and 1.2 percent that demand had disappeared completely.

Nearly 30 percent of households in the agricultural sector produced crops for export, with export sales being most common in the Momase region. Of female-headed agricultural households, 21.0 percent sold crops for export, as well as 11.6 percent and 27.8 percent of agricultural households in urban and rural areas, respectively. There were minimal differences across the wealth categories. Comparing across regions, export sales were most common in the Momase region (49.5 percent), followed by the Southern region (21.9 percent), the Highlands region (19.0 percent), and finally the Islands region (16.1 percent). This finding was robust to econometric analysis and there were no other significant differences in the other household characteristics.

Raising livestock for sale was more common than raising livestock for home production but was mainly considered a secondary activity to crop production. Nationally, 41.9 percent of households engaged in livestock production. Of the households engaged in these activities, 26.2 percent raised livestock only for home consumption, 38.8 percent only for sale, and 35.0 percent for both. In livestock producing households, 70.1 percent also engaged on crop production, and the majority considered crop production to be their primary activity. Livestock activities were more common in the Highland region (60.2 percent of households), compared with 27.4 percent in the Islands region, 25.9 percent in the Momase region, and 22.0 percent in the Southern region. In the Highlands region, households were roughly evenly split between production for home consumption only (36.8 percent), for sale only (30.5 percent), and both (32.7 percent), whereas in the other regions, livestock was predominantly produced for sale.

Similar to crop producers, most livestock producers have seen a decline in demand for their products. Nationally, 4.5 percent of households that sold livestock have experienced higher demand for their products compared to this time last year, compared to 82.5 percent which have seen no change, 9.4 percent who have seen a decrease, and 3.6 percent which had no income. Limited sample sizes preclude further analysis into the characteristics of households which have been disproportionately affected by declines, though there is some evidence to suggest the impacts may be more acute in rural areas.

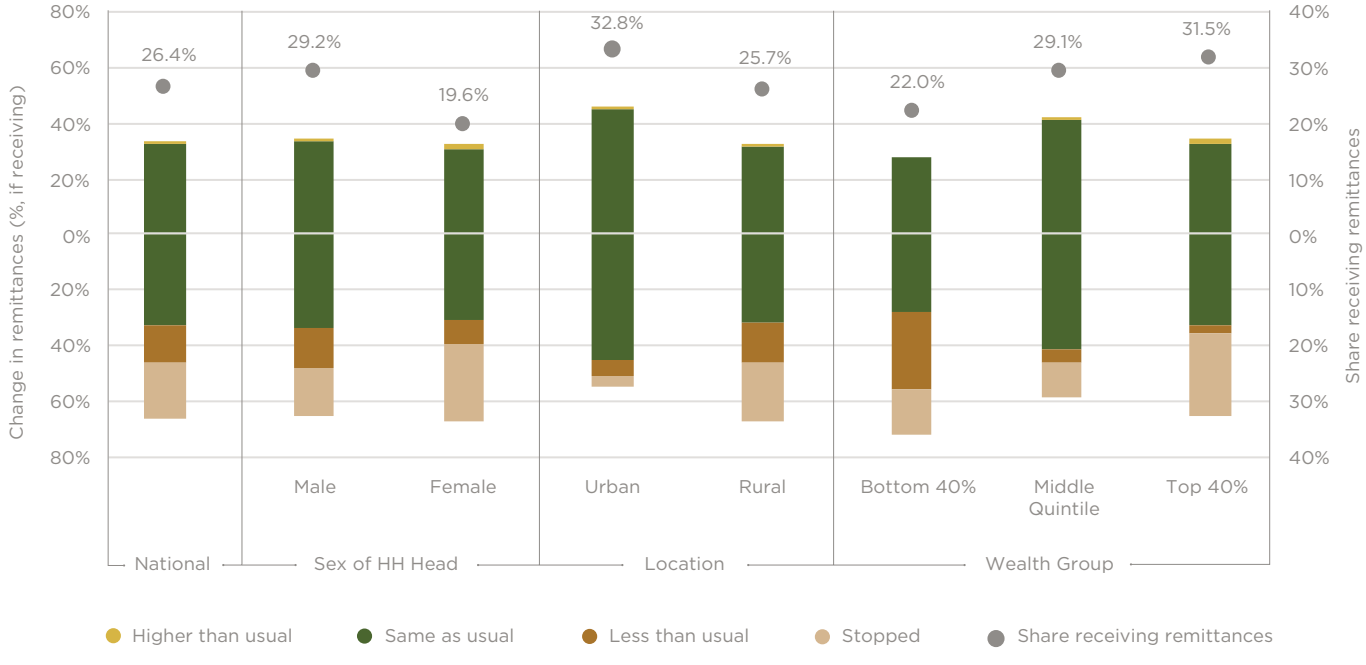
Few agricultural households engaged in fishing, either for home consumption or sale. Only 2.6 percent of agricultural households, and 1.7 percent of households overall, reported engaging in fishing activities. Those which did participate were mainly in rural areas and less than 0.5 percent considered fishing to be their main agricultural activity. Of those that did engage in fishing, 45.9 percent fished only for home consumption, 20.0 percent only for sale, and 34.1 percent for both. Of those engaged in sales, 5.0 percent have experienced an increase in demand since this time last year, 78.4 percent have experienced no change, and 16.5 percent have experienced a decline. Given the small sample sizes, no further disaggregation was possible.

3.5 Remittances

Of the one-quarter of households that usually receive remittances, nearly all reported receiving domestic remittances. Nationally, 26.4 percent of households reported usually receiving remittances in round 2, which was not statistically different than the 20.0 percent that reported usually receiving remittances in round 1. Also similar to round 1, more than 95 percent of the remittances were domestic in origin, with small numbers also coming from New Zealand, the United States, and South Asia. Households in the highest 40 percent of the wealth distribution were the most likely to usually receive remittances (31.6 percent) compared with the middle quintile (29.3 percent) and the bottom 40 percent (22.0 percent). These percentages were marginally higher but similar to those seen in round 1 with the exception of the middle quintile, which increased from the 16.5 percent in round 1.

Though amounts were unchanged for most households that usually receive remittances, certain groups were more likely to have seen payments decrease or stop. As in round 1, two-thirds of households that usually receive remittances said that the amounts have not changed. Of those indicating they received less than usual, the share decreased from 25.0 percent in round 1 to 13.6 percent in round 2, but households in the bottom 40 percent were more likely to have seen decreases, conditional on still receiving transfers. The share which indicated they received no payments increased significantly from 6.4 percent in round 1 to 19.3 percent in round 2, with the largest losses being seen for the top 40 percent. Econometric analysis indicated that households in rural areas that usually receive remittances were more likely to have seen the payments stop compared to households in urban areas. Further, though households in the top 40 percent were more likely to say they usually receive remittances, they were also about 15 percent more likely to say these payments have stopped compared to the lower three quintiles. See Figure 19 below for further detail.

Figure 19. Share receiving and change in remittances



Source: Round two of the high frequency mobile phone survey

3.6 Access to Financial Services

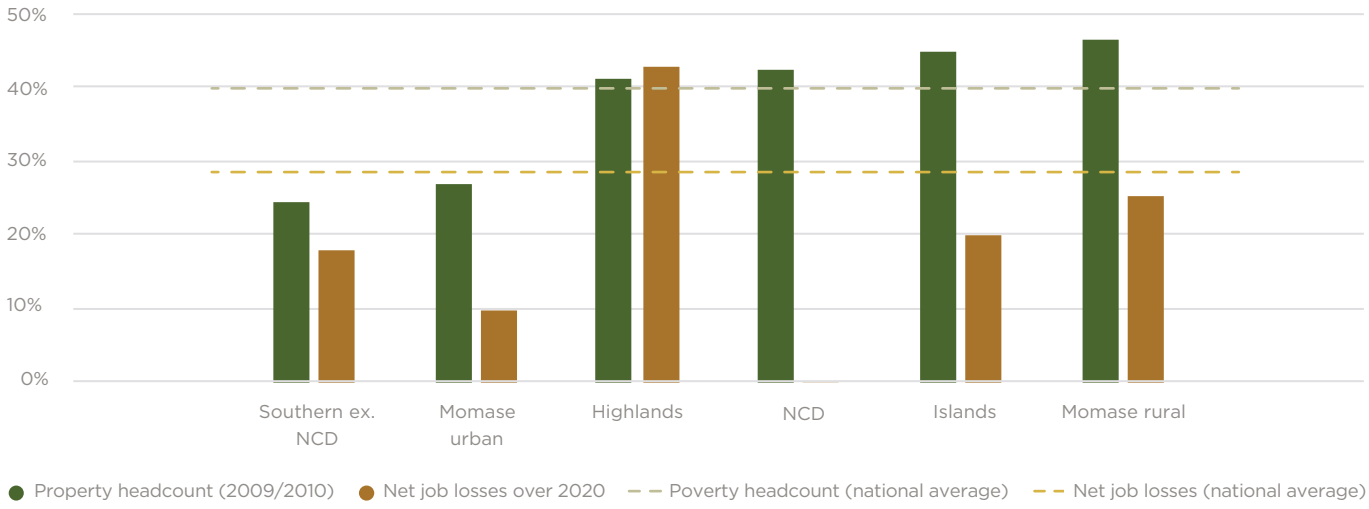
The need to access financial services was most prevalent in urban areas and among the top 40 percent, but there were no reported limitations on accessing these services. Nationally, 32.1 percent of households reported needing to access financial services, including going to a bank, ATM, or post office to make a withdrawal, in the last month. In urban areas 72.1 percent of all households and 61.8 percent of households in the top 40 percent of the wealth distribution required these services, compared with 27.9 percent of households in rural areas and 20.1 percent of households in the bottom 40 percent and 21.7 percent in the middle quintile. Across the regions, more households in the Southern and the Islands regions (45.4 percent and 40.2 percent, respectively) needed financial services compared to the Momase and Highlands regions (28.4 percent and 26.4 percent, respectively). More than 98 percent of respondents needing services were able to access them: a finding which was consistent across demographic and geographic categories.

The relatively small share of households that needed mobile money were able to access it. Nationally only 4.0 percent of households tried to access mobile money in the previous month, with the highest prevalence in urban areas (15.6 percent) and the top 40 percent (8.1 percent) compared to rural areas (2.8 percent), the bottom 40 percent (2.9 percent) and the middle quintile (1.5 percent). Of those that tried to access mobile money, 92.5 percent were successful, but limited sample sizes preclude further analysis.

3.7 Impacts on Poverty & Inequality

Poverty has very likely increased in 2020. Monetary poverty in PNG was last measured at 39.9 percent by the 2009 Household Income and Expenditure Survey (HIES). Since that time, positive economic growth has likely decreased poverty, but declining economic conditions over the past years, particularly for vulnerable groups - including those living in rural areas and the Highlands region in particular, those in the informal sector, and those in the bottom wealth deciles - have likely reversed at least some of those gains. As seen in Figure 20 below, recovery in employment has been slower for the bottom 40 percent, and as shown in Figure 14 above, even for those in the bottom 40 percent that continued working, a disproportionate share have seen incomes fall. In addition, about 25 percent of households in the bottom 40 percent with non-farm enterprises have seen lower incomes in the month prior to round 2 data collection, 20 percent of agricultural households in the bottom 40 percent expect lower earnings this agricultural season compared to last, and households in the bottom 40 percent were more likely to see lower remittances compared to usual.

Figure 20. Summary figures for changes in employment by group



Source: Round two of the high frequency mobile phone survey.

Job losses over 2020 likely also increased inequality in PNG. Figure 21 below shows the poverty headcounts from the HIES and the net job losses over the course of 2020 for the six HIES strata (NCD, Southern region excluding the NCD, Highlands region, Islands region, Momase region – urban, and Momase region – rural). The two areas which had substantially lower poverty levels in 2009, Momase region – urban and Southern region excluding the NCD, had below average net job losses, though so did the three areas with the highest poverty levels, the NCD, Islands region, and Momase region – rural. The Highlands region, which is the largest of the six groups, had both higher than average poverty as well as higher than average job losses. According to the 2009 HIES, inequality was greater within-strata than between-strata. Given the mixed results at the stratum level, it is hard to determine the impact on between-strata inequality, but the findings above related to slower recovery in the agricultural sector and among the bottom 40 percent indicate increases in within-strata inequality, and a likely overall increase in inequality. The implication of this probable increase in inequality is worrisome as the Gini coefficient in 2009 was 41.9, one of the highest in the Pacific region.

Figure 21. Poverty headcount (2009) and change in net employment (2020)

Source: 2009 Household Income & Expenditure Survey & rounds one and two of the high frequency mobile phone survey

4.1 Access to Staple Starch, Proteins, Fruits and Vegetables[15]

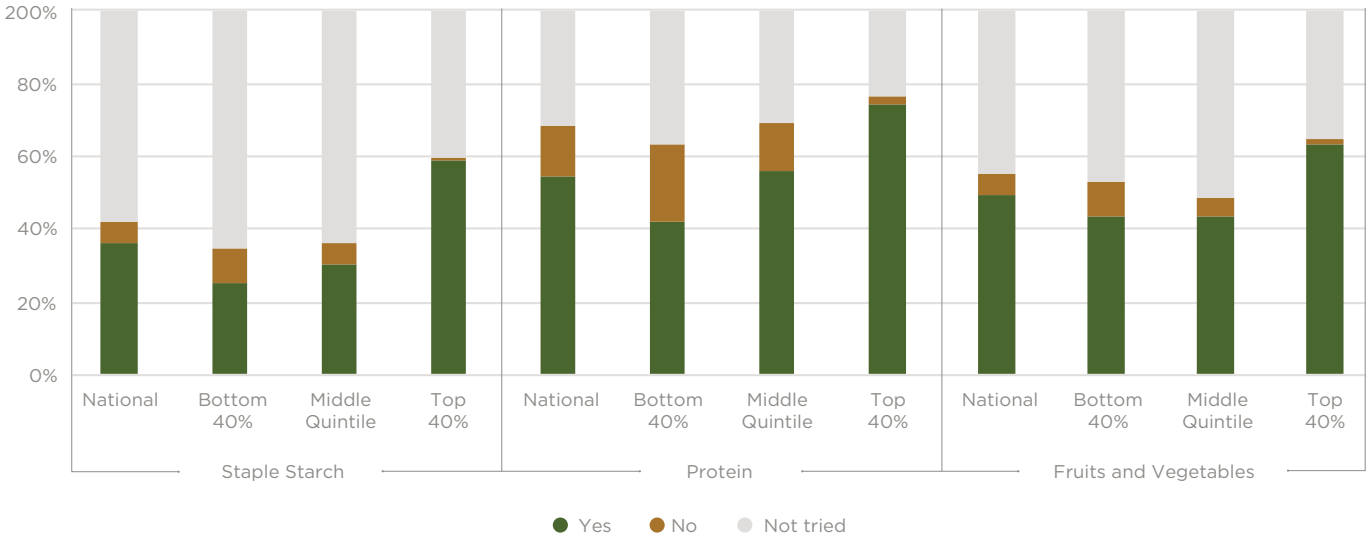
Urban markets and supply chains continue to function. As in round 1, most urban households indicated having sufficient access to food in the week prior to the survey, and very few issues were reported. Nationally, the 79.0 percent of urban households which attempted to buy the main staple starch was unchanged from the 77.3 percent of households from round 1, and again nearly all (98.8 percent) were able to do so. Similarly, for staple proteins, 87.2 percent tried to purchase their usual option, a marginal increase from round 1, and 97.9 percent were successful, while 82.1 percent tried to purchase fruits and/or vegetables, and 91.5 percent were successful. Of the small percentage that were unable to purchase desired food items, the main reason cited was that the household could not afford the items, and the main reason for not trying to purchase was because of home production or, to a more limited extent, bartering.

Rural residents still relied mainly on home production, but there has been a substantial increase in those that cannot afford to buy food. Nationally, only 31.4 percent of rural households reported trying to purchase the staple starch, 51.0 percent trying to purchase the main protein, and 45.7 percent attempting to buy vegetables, levels which were similar to those recorded in round 1. Unlike in round 1, in which 99.8 percent of respondents were able to purchase staple starches if they tried, only 82.5 percent were able to do so in round 2. There were also further declines in the percentage of households being able to purchase their preferred protein in rural areas, decreasing from 83.8 percent in round 1 to 77.1 percent in round 2. The ability to purchase fruits and vegetables also declined from 91.8 percent in round 1 to 74.9 percent in round 2. Of those that could not purchase their preferred items, nearly all said that the main reason was affordability, with 98.3 percent for staple starches, 85.4 percent for protein, and 98.3 percent for fruits and vegetables.

The bottom 40 percent were the most likely to be unable to purchase essential food items. The bottom 40 percent were more likely than other groups to depend on home production, owing to their disproportionate participation in the agricultural sector, but of those that were purchasing food in the market, they had the most difficulties. Among the bottom 40 percent, only 34.7 percent attempted to purchase staple starch in the market, compared with 59.9 percent of the top 40 percent, but of those purchasing starches in the market, 26.5 percent of the bottom 40 percent were unable to do so compared with only 2.0 percent of the top 40 percent. The equivalent percentages for purchasing protein were 63.2 percent of the bottom 40 percent purchasing protein in the market, compared to 76.8 percent in the top 40 percent, with 33.0 percent in the bottom 40 percent being unable to purchase compared with 3.5 percent in the top 40 percent. For fruits and vegetables, of the 53.0 percent of the bottom 40 percent that attempted to purchase in the market, 17.4 percent were unable to purchase, compared to the top 40 percent where 64.6 percent of households were in the market but only 2.1 percent were unable to purchase. As noted above, the near-universal reason for being unable to purchase desired items was affordability – pointing to increasing food insecurity among the poor and vulnerable as economic conditions deteriorate. See Figure 22 below for further detail.

15 As in the round 1 report, the questions regarding the availability of the staple starch first asked households to specify what the main staple starch was that the household consumed typically at that time of year and the questions proceeded to ask about that specific starch. A similar approach was used to identify the main protein. This approach may mean that returning households were reporting on a different food item than in round 1 but it allows the survey to reflect actual patterns of seasonal variation and therefore represents a more accurate representation of the constraints faced by households.

Figure 22. Ability to purchase essential food items

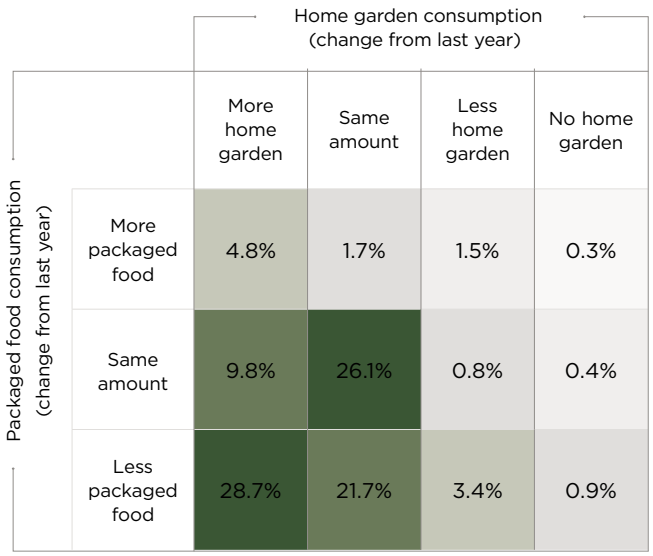


Source. Round two of the high frequency mobile phone survey.

Econometric analysis further identifies groups within rural areas which were vulnerable in terms of food access. Conditional on trying to purchase, rural households in the bottom 40 percent were 15.6 percent more likely to be unable to access their preferred starch, 19.1 percent more likely to be unable to access their preferred protein, and 18.5 percent more likely to be unable to access fruits and vegetables. Rural households in the middle quintile were 8.8 percent more likely to be unable to access their preferred protein, and 19.8 percent more likely to be unable to access fruits and vegetables, compared to rural households in the top 40 percent. Rural female-headed households were 22.9 percent more likely to have been unable to access their preferred staple starch and 16.6 percent more likely to have been unable to access their preferred protein. In terms of regional impacts, compared to those living in the Southern region rural households in the Highlands region were more likely to have been unable to access their preferred starch and protein, and rural households in the Momase region were more likely to have been unable to access their preferred protein, while households in the Islands region were less likely to have faced difficulties in purchasing fruits and vegetables. In addition, the starch and protein access models were re-run including fixed effects for the type of food item sought by the household. The additional controls did not substantially impact the results on staple starches, but there were significant changes to the protein findings. In particular, households which listed pork as their main protein had more difficulty compared with fish and other proteins, and households that listed a variety of items had less difficulty, likely due to the ability to substitute between items. The inability to access pork, however, may be unrelated to COVID-19 as there continue to be issues with swine flu in certain regions of the country. With these additional controls, female-headed households and those in the bottom 40 percent were no longer statistically significant, though the findings for regions and the middle quintile were robust to the inclusion. Table 5 in the appendix shows the full results.

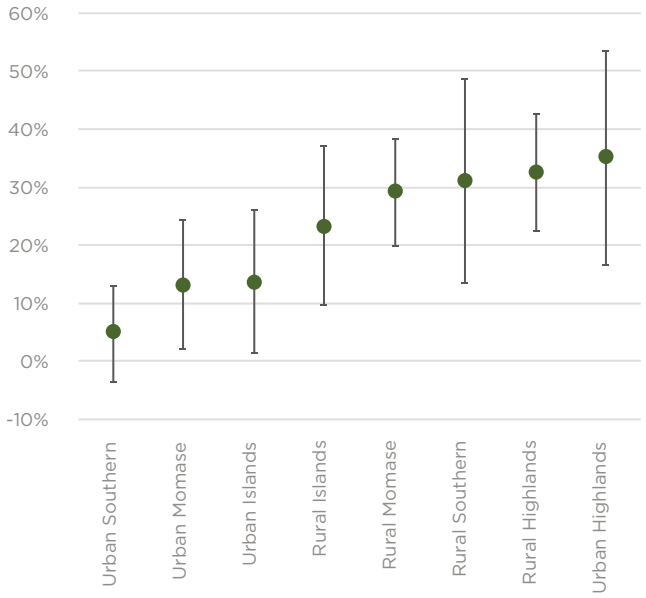
There has been a definitive shift in the past 12 months from packaged food to home garden production. More than half of households nationally reported consuming less packaged food this year as compared to last year. As shown in Figure 23, 28.7 percent of households indicated relying more on their home garden production and less on packaged food, while an additional 21.7 percent indicated consuming less packaged food but consuming the same amount from their home garden. Approximately one-quarter, 26.1 percent, consumed the same amount of both, while only a small share, 8.2 percent, indicated consuming more packaged food. Households in the bottom 40 percent and middle quintile were more likely to make the shift from packaged food to home garden production, 31.5 percent and 32.1 percent respectively, compared to 20.8 percent in the top 40 percent, though econometric analysis indicated that location was the main determining factor. After controlling for wealth group and the sex of the household head, households in urban areas in the Southern region had a likelihood of only 4.8 percent of shifting towards home garden production, compared to 35.2 percent in urban areas in the Highlands region. See Figure 24 below for full results.

Figure 23. Heat map of shift between package food and home gardens



Source. Round two of the high frequency mobile phone survey.

Figure 24. Predicted likelihood of shifting from packaged food to home gardens (by location, controlling for wealth group and sex of household head)



Source 1. Round two of the high frequency mobile phone survey.

Food Insecurity

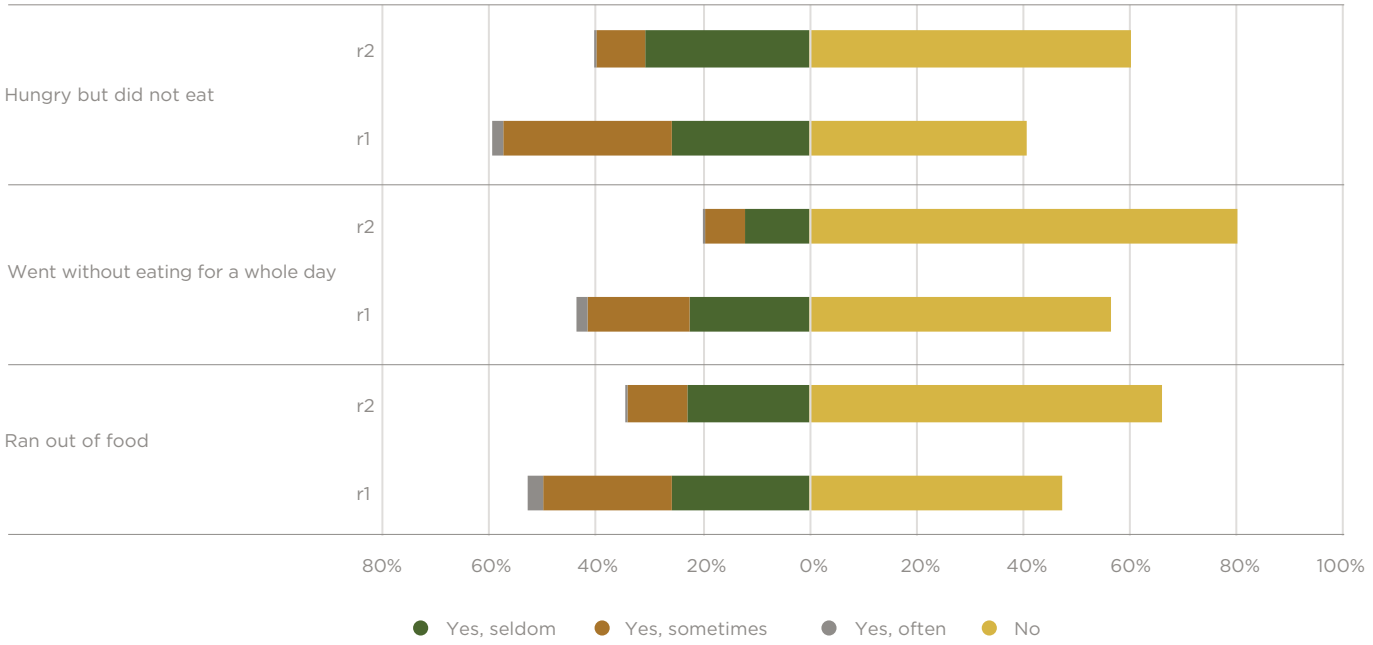
Nearly half of households reported at least one instance of food insecurity in the previous 30 days.[16] Descriptive statistics showed that households in the Momase region were significantly more likely to have reported at least one instance of food insecurity (65.3 percent) compared to the Highlands (39.7 percent) or Southern (48.3 percent) regions, and the Islands region (52.2 percent). There were, however, no other significant relationships for urban or rural residence, sex of the household head, or the wealth group. These findings were robust to econometric analysis, including the inclusion of a variable controlling for the household participating in agriculture.

Overall food security remained high, but compared to June, the situation had improved by December in urban areas with marginal increases in rural areas. Across the three categories of food insecurity measured in both round 1 and round 2, food insecurity decreased in urban areas. The percentage of urban households reporting that at least one household member was hungry but did not eat in the past 30 days fell from 59.5 percent in round 1 to 40.0 percent in round 2; those reporting that at least one household member went the entire day without eating fell from 43.8 percent in round 1 to 19.7 percent in round 2; and the share of household saying they ran out of food at least once in the last 30 days fell from 52.7 percent in round 1 to 34.1 percent in round 2. In contrast, in rural areas the percentage of households reporting that at least one household members was hungry but did not eat in the past 30 days increased marginally from 37.7 percent in round 1 to 40.2 percent in round 2 and the share of household saying they ran out of food at least one in the last 30 days similarly increased slightly from 37.9 percent in round 1 to 41.3 percent in round 2. The share reporting that at least one household member went the entire day without eating, however, increased substantially from 26.9 percent in round 1 to 34.6 percent in round 2. There was some evidence that the severity of food insecurity may

16 The round 1 survey conducted in June used only a subset of full set of questions recommended by the Food and Agriculture Organization to measure food insecurity. In round 2, all seven questions were asked, with an additional disaggregation between the respondent and any other household member to measure intra-household food insecurity. The full set of questions included in round 2 were: have you (or another household member) worried about not having enough food to eat because of lack of money or other resources?; have you (or another household member) been unable to eat healthy and nutritious/preferred foods because of a lack of money or other resources?; have you (or another household member) eaten only a few kinds of foods because of a lack of money or other resources?; have you (or another household member) had to skip a meal because there was not enough money or other resources to get food?; have you (or another household member) been hungry but did not eat because there was not enough money or other resources for food?; have you (or another household member) gone without eating for a whole day because of a lack of money or other resources?; and was there a time in the last 30 days in which your household ran out of food because of a lack of money or other resources?

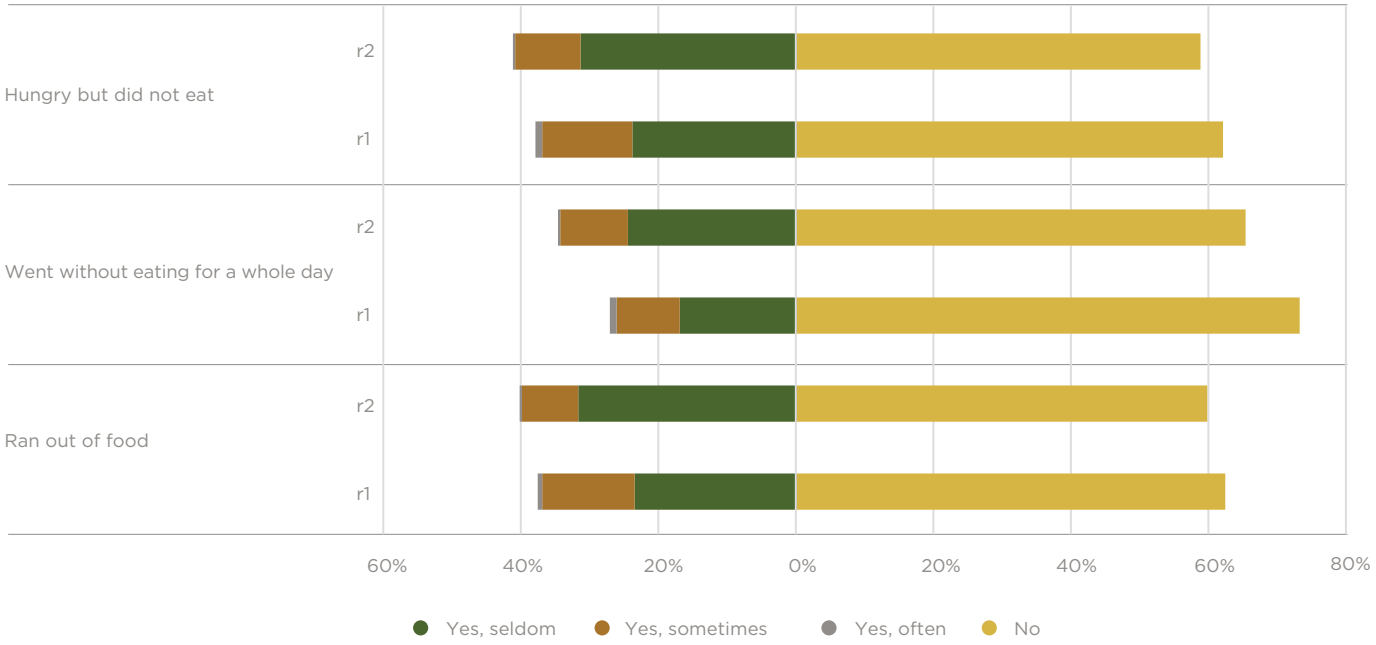
have decreased, however, as a substantial share of households that indicated food insecurity happened "sometimes" or "often" in round 1 had shifted to "seldom" by round 2, though these differences were not statistically significant. Also, since round 1 had higher food insecurity in urban areas, the decrease in urban areas coupled with the marginal increase in rural areas has led to some convergence between the two areas, though the incidence of at least one household member going the entire day without eating was substantially higher in rural areas in round 2 compared to urban. Figure 25 and Figure 26 below show the shift across questions and rounds.

Figure 25. Severity of food insecurity across rounds (urban)



Source: Rounds one and two of the high frequency mobile phone survey.

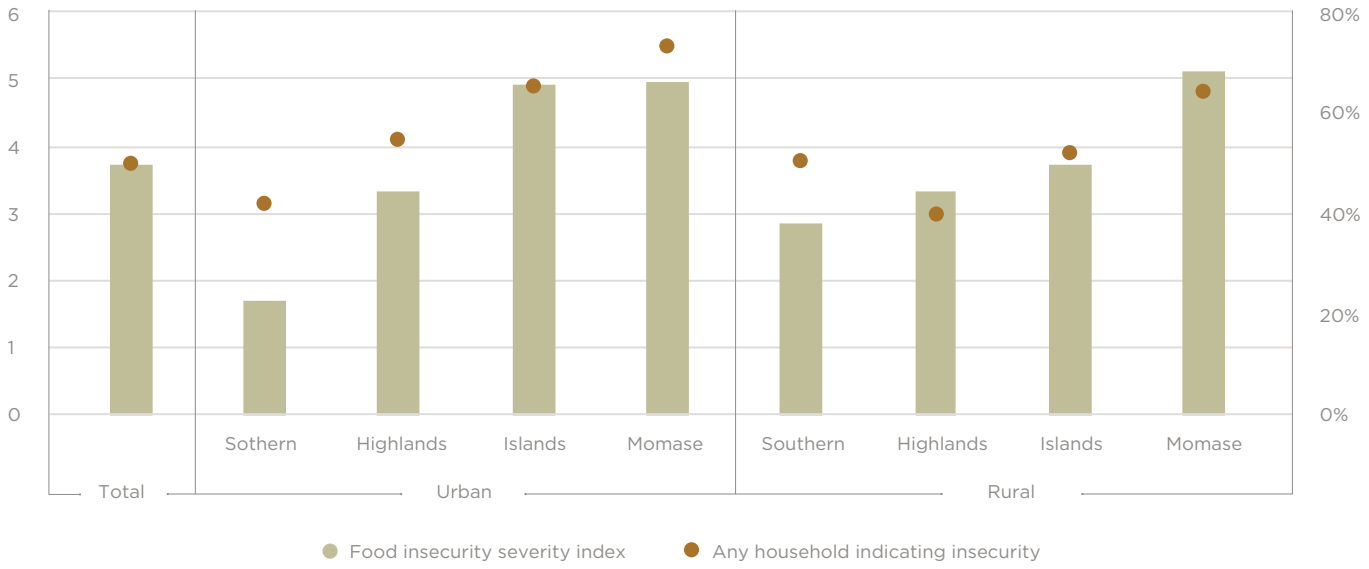
Figure 26. Severity of food insecurity across rounds (rural)



Source: Rounds one and two of the high frequency mobile phone survey.

There were substantial differences in food insecurity between urban and rural areas and across regions. While nationally, 49.5 percent of households indicated that at least one household member had experienced at least one aspect of food insecurity in the past 30 days, this percentage varied across urban areas from 41.6 percent in the Southern region to 72.7 percent in the Momase region, and in rural areas between 49.0 percent in the Southern region and 64.0 percent in the Momase region. The higher variation in urban areas was likely reflective of the ability of rural households to employ home production in agriculture to mitigate food insecurity to a certain degree. To compare the severity of food insecurity across the same geographies, a basic household-level index was constructed, assigning 1 point for each "yes, but seldom" response, 2 points for a "yes, sometimes" response, 3 points for a "yes, often" response, and no points for a no response, then summing these measures across the seven questions. The national average for this index was 3.7, and the results mainly mirrored the frequency of food insecurity, with households in the Southern urban areas showing lowest index score at 1.7, with the highest values in Momase urban and rural areas at 5.0 and 5.1, respectively. See Figure 27 below for further details.

Figure 27. Food insecurity by region and urban/rural areas



Source: Round two of the high frequency mobile phone survey.

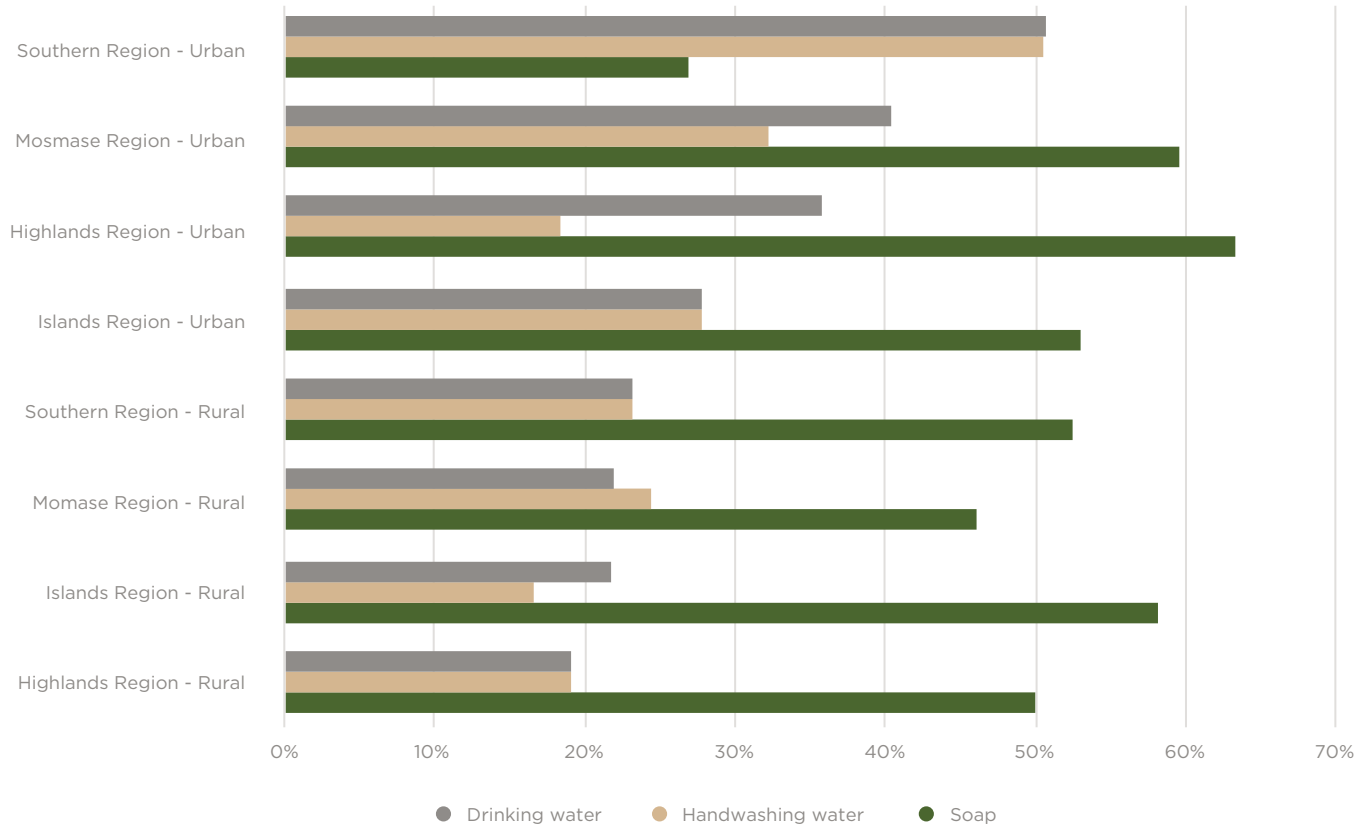
There was limited evidence of women respondents being more food insecure than men. Beyond household-level food insecurity, if there were differences within households of how food was being divided, or if women were reducing consumption to benefit other household members, there could be intrahousehold food insecurity. To identify this issue, the food insecurity questions were first asked at the level of the respondent and then at the level of the household. Comparing the responses, however, does not yield any statistically significant differences between men and women respondents for any of the six individual level indicators at the national level, though when it is done separately for urban and rural areas, women in urban areas were more likely to worry about having enough to eat, eat only a few kinds of food, or to be hungry but not eat (see Table 6 in the appendix). In rural areas, there were no statistically significant different findings in either the descriptive or econometric analysis (see Table 7 in the appendix).

Approximately one-quarter of respondents in households with children noticed a decrease in access to public services in their community. The UNICEF survey covered five key public services, with roughly consistent percentages of respondents indicating declines in availability for each: water supply and services (23.5 percent), sanitation supply and services (27.2 percent), mental health and psychosocial support services (22.9 percent), health care services (36.4 percent), and family planning services (27.9 percent) in the three months prior to the survey compared to what was usually available in their community. There was minimal variation across geography and respondent characteristics. Econometric analysis showed few significant relationships, though notably households in urban areas of the Highlands region, and rural areas in the Islands and Southern regions were more likely to have reported reduced access to health care than those living in urban areas of the Southern region. Full results are shown in Table 8 in the appendix.

5.1 Water and Sanitation

Between 20 and 50 percent of UNICEF survey respondents reported insufficient household access to water in the week prior to the survey. The water access issues were most acute in urban areas of the Southern region, where more than 50 percent of respondents indicated that they had insufficient water for both drinking and handwashing in the previous seven days. Respondents living in urban areas generally had more trouble accessing sufficient water, particularly drinking water, as shown in Figure 28 below, but these geographic impacts are no longer statistically significant if controls are included for the household wealth level. See Table 9 in the appendix for the full econometric results. In the absence of baseline information, however, it is not possible to know how much of this difficulty was related to COVID-19 or deteriorating economic conditions as opposed to systemic or seasonal problems.

Figure 28. Inability to access sufficient water and soap



Source: UNICEF mobile phone survey.

The majority of households with children did not have sufficient soap to wash hands when needed. Nationally 50.5 percent of UNICEF survey respondents reported their household did not have sufficient access to soap. In contrast to water access, which was most constrained in urban areas of the Southern region, soap was most accessible in the NCD, with 26.8 percent saying it was insufficient, and areas outside the NCD had consistently lower access, ranging up to 63.3 percent in urban areas in the Islands region. See Figure 28 for full details. Econometric analysis showed that all areas, with the exception of urban areas in the Highlands region, had significantly lower access, but that the respondent's wealth group was not significant, which indicates a location or availability problem rather than a cost issue. Further analysis on changes in costs over the previous three months indicated 63.8 percent of respondents had seen no change in the price of soap, with 32.8 seeing an increase and 3.4 percent seeing a decrease in price. Price increases were most commonly cited in urban areas of the Islands (49.6 percent) and Southern (48.6 percent) regions, and least common in urban areas of the Momase region (15.0 percent). Econometric analysis further showed that those in the middle quintile were more likely to note price increases, perhaps due to lower demand in the bottom 40 percent. See Table 9 in the appendix for the full econometric results.

5.2 Education and Schooling

There were modest declines in enrolment between the 2019 and start of the 2020 (pre-pandemic) school year. According to the UNICEF survey during the 2019 school year, 77.4 percent of students currently aged between 6 and 14 were attending school, including 51.8 percent of those age 6 to 8, 91.8 percent of those age 9 to 11, and 98.0 percent of those aged 12 to 14. Between the end of the 2019 school year and the start of the 2020 school year, there was a significant increase in attendance of children in the 6-8 age group, rising to 70.0 percent with children entering the school system for the first time, and a slight decrease in those aged 12-14, decreasing to 94.4 percent. The survey did not cover the reasons for the pre-pandemic shift, but changes in school fees or the increasing need for household income given the already declining economic situation in PNG are possible causes. See Table 10 in the appendix for full results.

The survey showed a dramatic decline in school attendance since the start of the pandemic, but it is likely much of this change reflected the school holiday period at the time of data collection. The UNICEF survey showed percentages falling to 28.5 percent, 40.0 percent, and 48.2 percent, for the 6-8, 9-11, and 12-14 age groups, respectively. These changes were unlikely to be reflective of the current enrolment as the school year ended on December 11, before the start of fieldwork, potentially confusing respondents. These questions will be revisited in subsequent rounds collected after the start of the next school year on February 1, 2021.

Less than 10 percent of primary and elementary school students participated in distance learning while the schools were closed.[17] Nationally 7.6 percent of elementary school student and 6.5 percent of primary school students indicated participating in distance-learning while the schools were closed. Neither descriptive statistics nor econometric analysis detected statistically significant patterns in the child, household head, or household characteristics associated with participation in distance learning. See Table 11 in the appendix for the regression results.

The vast majority of respondents indicated that students did not participate in distance learning because it was not provided by the school. Respondents that indicated that the child did not participate in distance learning were given six options as to why the student did not participate and asked to select all that apply. The most common response was "no remote learning program provided by the school," selected by 96.6 percent of respondents, followed by "equipment needed (TV, radio) not available at home," selected by 21.5 percent, "equipment needed (computer, smart phone) not available at home," selected by 21.2 percent, "parent/caregivers not able to support children in accessing it," selected by 14.1 percent, "child engaged in economic activity or household work," selected by 7.4 percent, and

17 The survey also included pre-school and secondary school students, but these two groups were excluded from the analysis. Only a small share of students in the 3-5 years old age group were enrolled in the first place, making it difficult to interpret the findings. In terms of secondary school students, there were only 10 captured in the sample and therefore the sample size was insufficient to include these students.

"internet connection not available at home (e.g. too weak, too expensive)," selected by 4.1 percent. These responses, however, indicate some inconsistency in understanding on the part of respondents in that many indicated access issues, in terms of not having required equipment, in addition to a lack of availability of a distance learning program.

Of those students that did participate in distance learning, printed materials were the most common modality. Just over 60 percent of students participating in distance learning indicated that they had received hardcopy or printed study materials shared offline, compared with 12.1 percent that participated in classes or sessions broadcast on TV, 6.4 percent that participated in classes or sessions broadcast on the radio, 5.2 percent that used one-way video communications (such as YouTube or other non-interactive videos) on any device, 5.0 percent that used a two-way video communications (such as Zoom, Skype, WhatsApp, Viber) on any device, 3.3 percent that used pre-recorded classes or sessions shared offline with parents, and 1.3 percent that used softcopy study materials to be completed online or on any device.

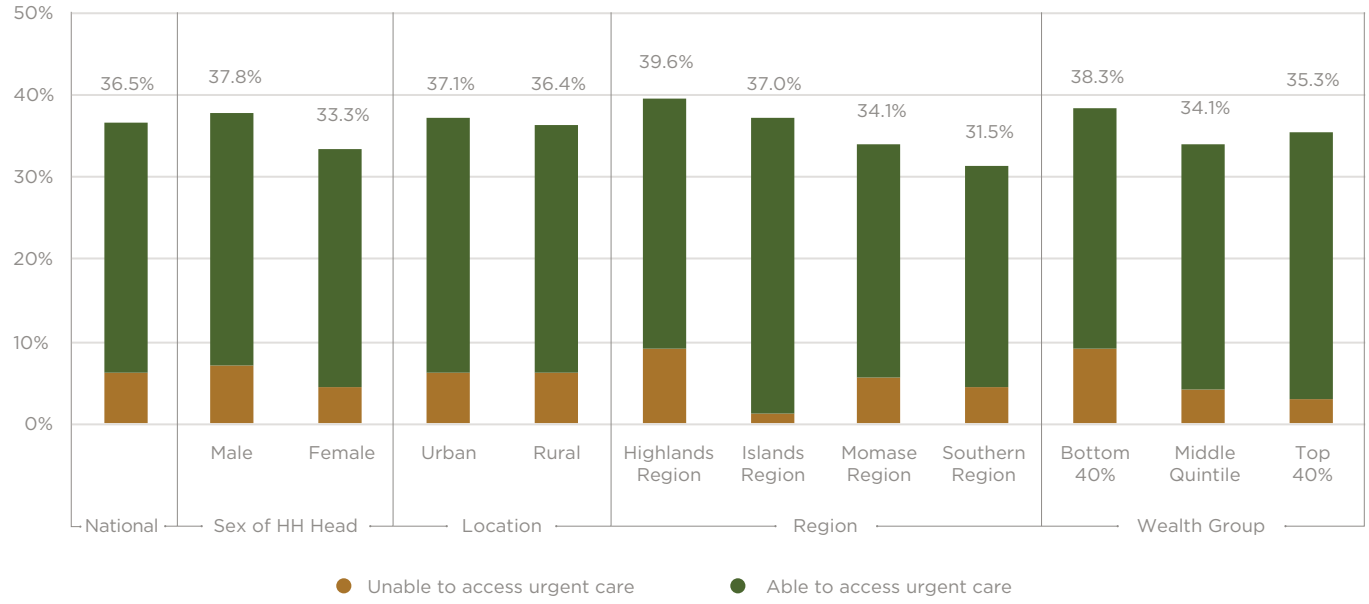
Nearly all respondents indicated that children resumed classes when schools reopened following closures, though a sizable share delayed their return. Of respondents for whom schools had closed at some point during the pandemic, 53.9 percent said that the child's school was currently open, and an additional 37.9 percent said that it had opened but was now closed (possibly related to school holidays). Only 8.2 percent indicated that the school had not yet reopened. Of those whose school had opened, 81.1 percent of students had returned when schools reopened, and an additional 17.4 percent returned with some delay. Only 1.5 percent of students did not return. The main reasons cited by these students for not returning were that the schools were unsafe (59.9 percent) and having no money for school fees (21.1 percent). Econometric analysis indicated that students age 9 – 11 were more likely to delay their return compared with those age 12 – 14, and that children whose parents had tertiary or higher education were less likely not to return at all. No other characteristics, including the sex of the child, were statistically significant. See Table 11 in the appendix for the regression results.

Child work was relatively rare in the period leading up to the survey. During the 15 days previous to data collection, 6.1 percent of children aged 6 to 14 were indicated to have done work for pay, or done business, farming, or another activity to help the family generate income. Econometric analysis indicated that children living households in the bottom 40 percent were more likely to have engaged in these activities while children aged 6 to 8 were less likely to work than older children. See Table 11 in the appendix for the regression results.

5.3 Access to Health Care

Though there is no evidence that COVID-19 was preventing adults from seeking medical care, those in the bottom 40 percent reported more difficulties, particularly for urgent care. Nationally, 36.5 percent of respondents indicated that a household member required urgent medical care in the previously month, such as for an acute illness or a broken bone. There was very little variation across location, sex of household head, or well-being status. Of those requiring care, 82.7 percent indicated that they were able to access the needed care, though there was some variation between groups. Of those in the Highlands region, 77.2 percent were able to access care, compared to 96.3 percent in the Islands region, 85.9 percent in the Southern region, and 83.1 percent in the Momase region. Comparing access across well-being status, 75.9 percent of those in the bottom 40 percent, 87.4 percent of those in the middle quintile, and 91.4 percent of those in the top 40 percent were able to obtain access to urgent care if needed. The main reasons cited for not being able to obtain care were no medical personnel present and the inability to travel, with no medical personnel present being the most commonly cited reason for the bottom 40 percent, and the inability to travel being most common for the middle quintile and top 40 percent. See Figure 29 below for further detail.

Figure 29. Ability to access urgent care (total percentage of households requiring care indicated above bar)



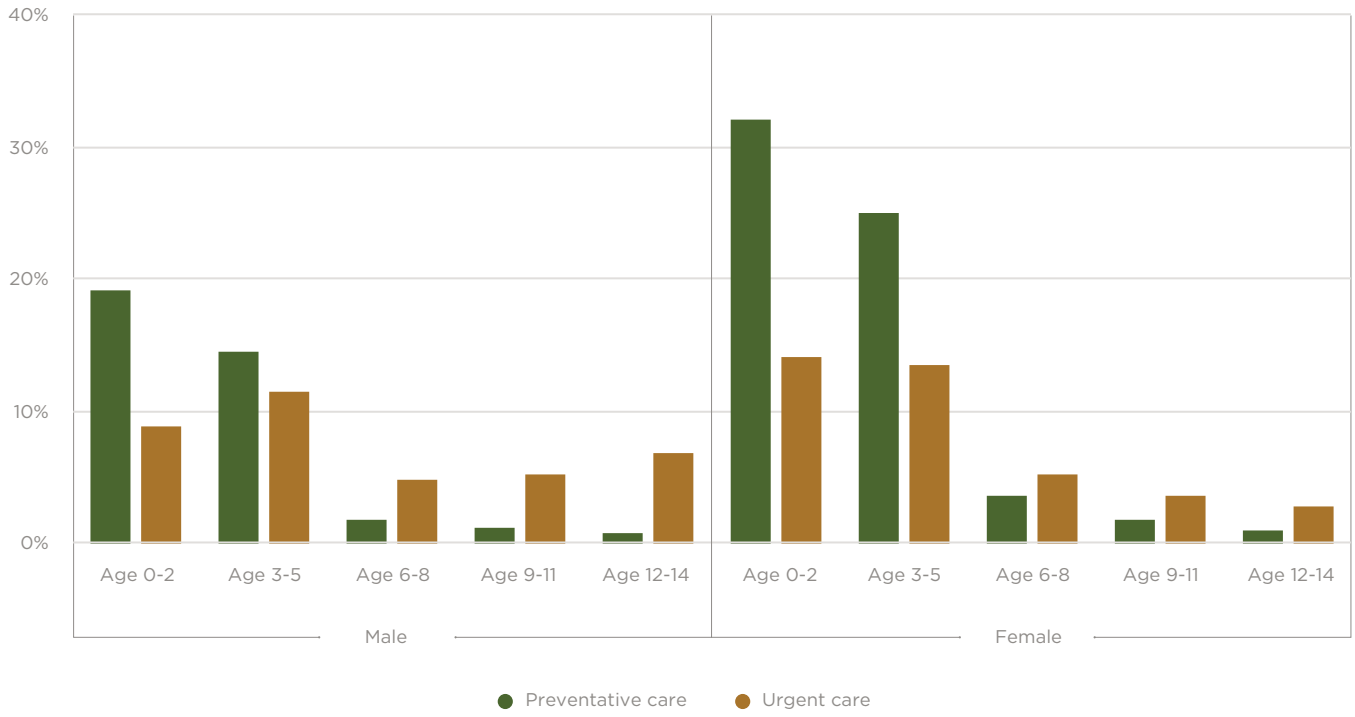
Source: Round two of the high frequency mobile phone survey.

Though COVID-19 was also not reported as an issue to accessing routine and preventative care, there were also some differences between groups. Nationally, 15.1 percent of households indicated requiring routine medical care, such as access to family planning services or tuberculosis care. There was some variation across regions, from a low of 6.8 percent of households in the Islands region to a high of 19.5 percent in the Southern region, as well as between well-being status groups, with 19.8 percent of households in the bottom 40 percent requiring routine care, compared to 11.9 percent in the middle quintile and 9.8 percent among the top 40 percent. Of those requiring routine care, nationally 76.4 percent were able to access the care they needed, including 96.7 percent of those in urban areas and 73.4 percent of those in rural areas, with the main issues being in the Highlands and Momase regions. There were also differences across well-being status, with 67.5 percent of those in the bottom 40 percent being able to access care, compared to 85.7 percent in the middle quintile, and 97.8 percent in the top 40 percent. The main reasons for not being able to access care also varied by well-being status, with a lack of money being the main reason for the bottom 40 percent, the inability to travel being the main reason for the middle quintile, and no medical personnel present being the main reason for the top 40 percent. Patterns for preventative care, including childhood vaccines and pre-natal care, were similar though the need was slightly higher, 25.9 percent of households nationally, ranging from a low of 16.1 percent in the Islands region to 23.8 percent in the Southern region, 26.5 percent in the Momase region, and 29.7 percent in the Highlands region. Access was better nationally, with 88.5 percent of households, but only 76.9 percent of households in the Highlands region requiring preventative care being able to access the needed care, compared with more than 99 percent in each of the other regions. The main reasons cited were no medical personnel available, lack of money, and an inability to travel.

There was limited evidence of difficulties by children in accessing health care. Overall 10.9 percent of children living in households captured in the UNICEF survey required routine or preventative care in the month prior to the survey, and 7.9 percent required urgent care. Preventative and routine care was more commonly sought by younger children. Caregivers of younger girls appear to have sought care more often, but the limited sample size means the differences were not significant. Urgent care was more equally distributed across age groups, but still required with greater frequency for younger children. See Figure 30 below for the distribution of children requiring care across sex and age groups. Of those children that did require medical care, however, nearly all were able to access it. In 92.3 percent of households in which one or more children required preventative or routine care, all the children were able to access the care they needed, and in an additional 7.1 percent of households, at least some of the children were able to obtain access. In less than one percent were no children able to obtain routine

or preventative care. Similarly, for urgent care, in 97.9 percent of households all the children were able to obtain required care, while in an additional 1.5 percent of households at least some of the children were able to obtain care. The sample sizes for the limited number of households in which care was not accessed were too small for detailed analysis, but financial reasons were the most commonly cited reason across the two types of care.

Figure 30. Health care needs by sex and age



Source: UNICEF mobile phone survey.

Migration 6

Migration was markedly higher in round 2 but may be driven by the holiday period. Using the panel sample of 950 primary respondents, 11.0 percent reported relocating to a different province in the three months prior to round 2 data collection in December 2020, compared with 2.5 percent that reported relocating in the three months prior to round 1 in June 2020. The substantial increase, however, may be at least partially driven by the holiday period coinciding with data collection, during which some may visit friends or families in other provinces. Subsequent rounds will provide more information as to the permanence of these shifts. Across the four periods for which there is information (three months prior to round 1 in March 2020, round 1 in June 2020, three months prior to round 2 in September 2020, and round 2 in December 2020), 80.2 percent of respondents reported having lived in the same province across all four periods, and 88.1 percent reported living in the same region in all four periods. Of the remainder, 8.9 percent reported moving between provinces once, 10.8 percent reported moving twice, and the remaining 0.2 percent reported moving three times. Of those that moved, 11.7 percent were respondents that have moved out of the NCD since March 2020 and have not returned, and 2.2 percent were respondents that have relocated to the NCD in that period. A negligible percentage left the NCD and returned. Overall, the majority of movement was between provinces outside in the NCD rather than a trend in people leaving the NCD, but limited sample sizes preclude more detailed analysis of the migration between provinces.

Public Trust, Community Security, and Intra-household Conflict 7

7.1 Public Trust

There was no evidence of a significant deterioration in community trust since June. As noted by the World Bank's Country Partnership Framework for PNG[18], community life, particularly in rural communities, has been an important source of resilience in avoiding conflict and therefore any deterioration in public trust can be seen an important warning sign, both for potential increasing unrest as well as fraying of the informal safety net system. Overall, 25.5 percent of respondent indicated that community relations had improved since June and an additional 67.1 percent indicated that they have remained unchanged. Percentages of those citing deterioration were higher in urban areas than rural, 13.1 percent compared to 6.8 percent, but remained low overall. Econometric analysis showed, in urban areas, those with both higher and lower education levels compared to secondary school were more likely to say that public trust had deteriorated, as well as those in the top 40 percent, while in rural areas, those that live in the Momase region were more likely to cite a deterioration. See Table 12 and Table 13 in the appendix for full results.

7.2 Community Security Issues

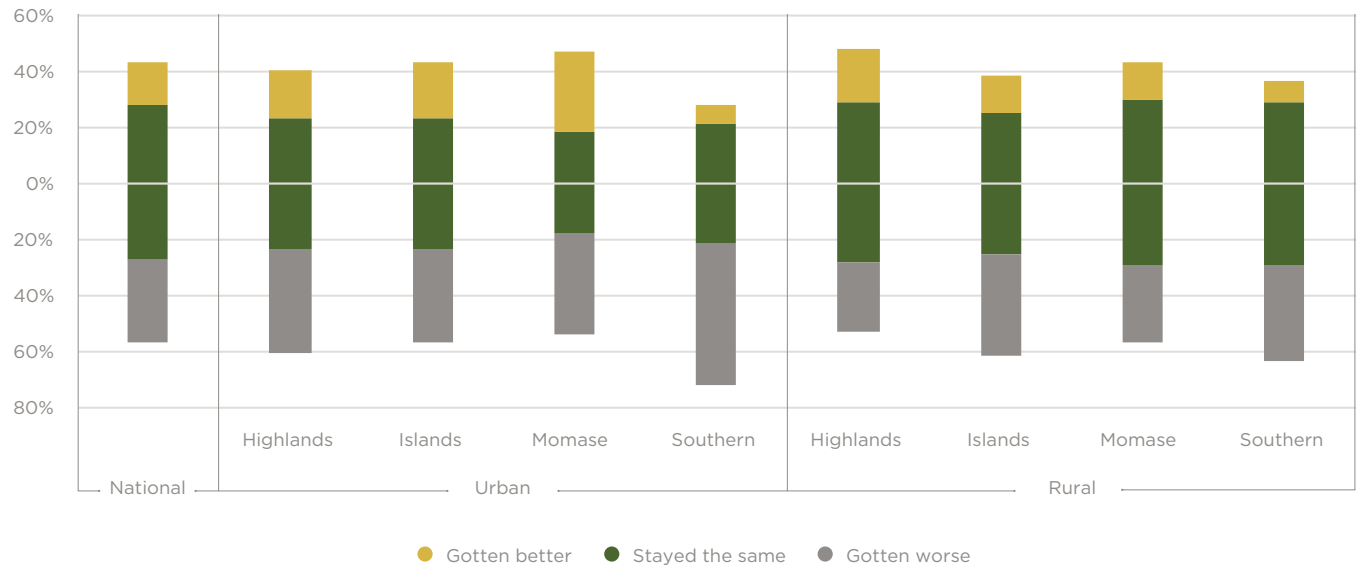
Most respondents did not note a deterioration with regard to property crimes. Nationally, 58.0 percent of respondents indicated that things stayed the same with regard to theft, with 25.3 percent indicating that things had improved since June and 16.7 percent indicating that things had deteriorated. Similarly, for damage to property, 59.7 percent indicated that things had remained the same, compared with 25.9 percent citing an improvement and 14.4 percent citing a deterioration. Though there is a high correlation between the two measures (77 percent), there were a higher percentage of respondents in urban areas that noted deteriorations regarding theft, 23.9 percent compared to 16.0 percent in rural areas, while there was a higher percentage citing a deterioration regarding damage to property in rural areas, 14.8 percent compared to 10.9 percent in urban areas. Econometric findings, also presented in Table 12 and Table 13 in the appendix, show significantly more respondents in rural areas of the Momase region indicating theft had gotten worse, and higher percentages in rural areas of both the Highlands region and Momase indicating damage to property had gotten worse, while in urban areas, those in the top 40 percent were more likely to indicate that theft had gotten worse. The latter finding could be an indication of increased crime against those perceived as being better off in response to the increasing economic hardships.

Neither intimidation nor violence by police was seen to be an escalating problem since June, though there were more concerns in urban than rural areas. As the police have been asked to take on a greater role in enforcing lockdown and other COVID-19 compliance measures, respondent's assessment of relations with the police could be seen as a key measure of increasing tension against authority. An alternative explanation could be tied to the crime rate, which if increasing, could also be driving increased perceived police intimidation. Nationally, 4.9 percent of respondents said there has been an increase in intimidation by police since June, and the same percentage cited an increase in police violence in the same period. In contrast, 24.1 percent that the situation had improved with regard to intimidation and 25.8 percent with regard to police violence. In urban areas, however, 13.4 percent indicated greater intimidation by police and 11.0 percent indicated greater violence by police, though these shares were still less than those indicating improvements in the same criteria, 23.3 percent and 21.3 percent, respectively. Econometric analysis yields limited additional information for urban areas, though showed that in rural areas those in the Highlands region were more likely to cite an improvement while those in the Momase region were more likely to cite a deterioration.

18 See figure 5 on page 14 of Papua New Guinea - Country Partnership Framework for the Period FY19-FY23 (Vol. 2) (English). Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/986831558749746464/Papua-New-Guinea-Country-Partnership-Framework-for-the-Period-FY19-FY23

More respondents believed the situation related to alcohol and drug abuse had gotten worse than believed it had gotten better, but the majority believed it remained the same since June. Nationally, 29.4 percent of respondents of respondents said that the situation related to drug and alcohol had deteriorated compared with 15.5 percent saying that it had improved, while 55.1 percent said that it remained the same. In urban areas, 40.4 percent of respondents indicated that things had deteriorated, compared to only 18.7 percent saying that it got better, and in urban areas of the Southern region, a majority of 50.8 percent of respondents indicated things had gotten worse. See Figure 31 below for more information. Econometric analysis indicates, controlling for other factors, perception of improvements in urban areas of Momase and rural areas of the Highlands region, but few other significant relationships. Full results are presented in Table 12 and Table 13 in the appendix.

Figure 31. Change in situation with alcohol and drug abuse since June



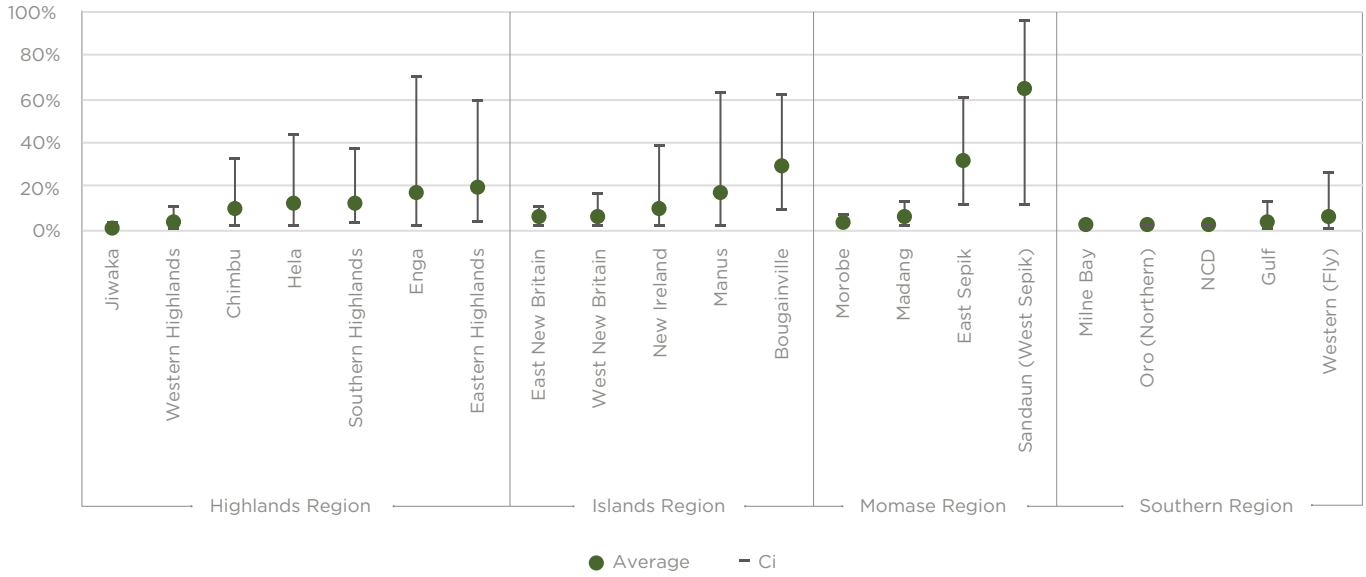
Source: Round two of the high frequency mobile phone survey.

Two-thirds of respondents indicated that the situation related to domestic violence had remained the same, with marginally more women citing improvements than men. Nationally, 67.0 percent of respondents indicated that the situation with domestic violence remained unchanged, compared with 22.2 percent of respondents that indicated it had improved and 10.8 percent that indicated it had deteriorated. Slightly more women, 26.0 percent compared to 18.5 percent of men, indicated that the situation had improved, driven by higher percentages of women citing improvements in rural areas. Unlike with property crime, police relations, and alcohol and drug abuse described above, there was no difference between urban and rural areas in terms of those that indicated domestic violence had gotten worse, while a slightly higher share, 22.9 percent compared to 15.4 percent, said that things had improved in rural areas. Econometric analysis did not yield further significant relationships though the full results are shown in Table 12 and Table 13 in the appendix.

Only a small share of respondents believed the situation related to land disputes, a historic flashpoint for community tension, had deteriorated but there was substantial variation across location and region. Nationally, 68.2 percent of respondents indicated the situation with regard to land disputes had not changed, with 24.4 percent saying that the situation had improved and 7.3 percent saying it had deteriorated. Between regions, however, there were substantial differences, ranging from the Southern region, for which 12.8 percent said the situation had improved and less than 2 percent said that it had deteriorated, to Momase, for which 25.7 percent said that the situation had improved and 12.3 percent said the situation had deteriorated. These diverse findings even within regions reflect the highly localized nature of land conflicts. As these events are rare compared to the experience of the entire population, mobile phone surveys are a highly imperfect instrument to accurately capture their frequency or impact. Within regions, the sample sizes are too low to assess with certainty. Figure 32

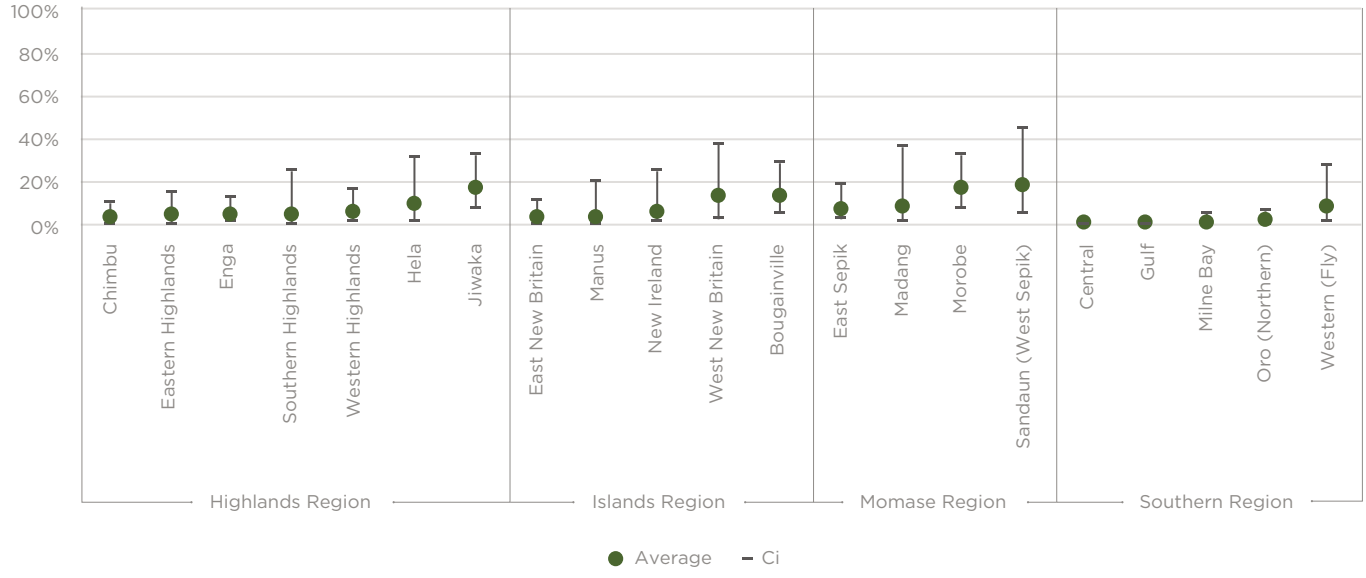
and Figure 33 below show the estimated share of respondents indicating the situation related to land disputes had deteriorated since June in urban and rural areas, respectively. Within the Momase region, the estimates range from near zero for Morobe and Madang provinces to quite high for the East Sepik and Sandaun provinces, though the high degree of uncertainty, indicated by the error bars of the confidence intervals demonstrate the limitations of the mobile phone survey instrument.

Figure 32. Share of respondents indicating situation related to land disputes had deteriorated since June (urban)



Source: Round two of the high frequency mobile phone survey.

Figure 33. Share of respondents indicating situation related to land disputes had deteriorated since June (rural)

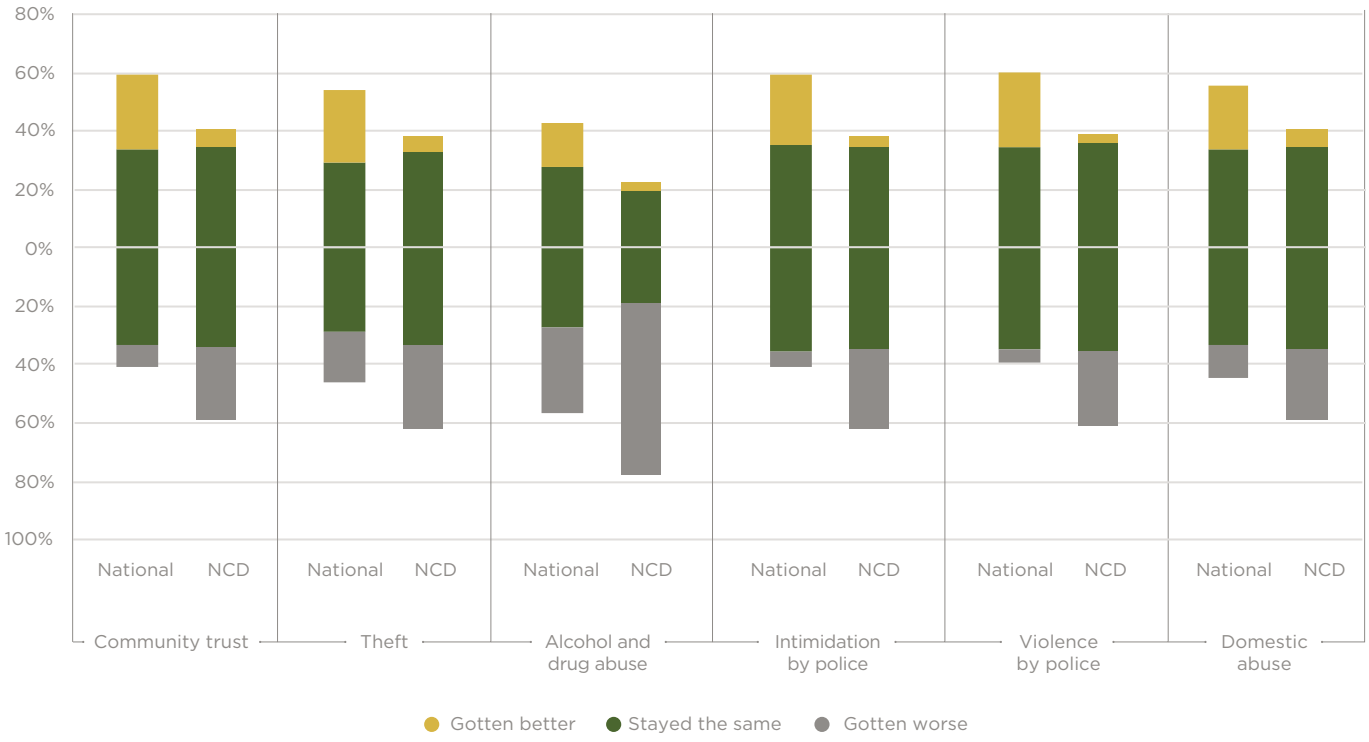


Source: Round two of the high frequency mobile phone survey.

Respondents in the NCD were more likely to cite deteriorations in security issues than in the wider national population. Figure 34 below shows the comparison between respondents in the NCD and nationally on several key issues of public trust and security. Overall respondents in the NCD said the overall state of relations within the community had gotten worse at a rate more than three times higher than the national population: 24.8 percent compared to 7.4 percent. Deteriorations in the situation

related to crimes such as theft and domestic abuse were also approximately double in the NCD, and the worsening issues with police intimidation and violence were more than five-fold higher in the NCD. Even the share citing declines in the situation related to alcohol and drug abuse, which was high nationally at 29.3 percent, was nearly double in the NCD. These declining conditions, coupled with the recent spike in cases that occurred following data collection, are potential warning signs of rising tensions in Port Moresby.

Figure 34. Changes since June on selected public trust and security issues (national vs. NCD)



Source: Round two of the high frequency mobile phone survey.

Tracking the responses of those that participated in both round 1 and round 2 highlight some areas for which a significant minority of respondents indicated deterioration across both rounds of data collection.[19] Figure 35 below shows heat maps for perceived changes for several aspects of public trust and security across the two rounds. For a subset of issues, specifically the situations related to theft, damage to property, land disputes, drug and alcohol abuse, and domestic abuse, nearly 20 percent of respondents indicated that the situation had deteriorated between both January and June as well as between June and December. Much smaller shares, less than 5 percent, indicated continued improvement. While tracking respondents over time is important to understanding subjective questions without a baseline these results should be used with caution, as indicating things had improved since the reference point does not mean that the situation is good or even acceptable – only that it was better than previously, due to the highly non-random nature of attrition between rounds.

19 Due to time constraints, the public trust and security section was asked only to a subsection of respondents in round 1 of the survey, and therefore there were only 499 respondents that responded to both rounds. A separate set of weights was therefore calculated using the same procedures described in the appendix to analyze this subsample.

Figure 35. Heatmaps for changes in public trust and security

Changes in trust and social relations within in the community

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.044	0.149	0.000
Unchanged	0.304	0.230	0.011
Deteriorated	0.000	0.247	0.015

Situation related to intimidation by police

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.015	0.060	0.000
Unchanged	0.291	0.397	0.202
Deteriorated	0.007	0.012	0.015

Situation related to theft

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.041	0.148	0.010
Unchanged	0.336	0.185	0.027
Deteriorated	0.008	0.050	0.196

Situation related to violence by police

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.016	0.064	0.000
Unchanged	0.311	0.554	0.015
Deteriorated	0.010	0.011	0.020

Situation related to damage to property

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.036	0.146	0.010
Unchanged	0.273	0.267	0.021
Deteriorated	0.041	0.014	0.191

Situation related to land disputes

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.016	0.054	0.000
Unchanged	0.283	0.407	0.021
Deteriorated	0.015	0.015	0.190

Situation related to alcohol and drug abuse

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.008	0.140	0.025
Unchanged	0.267	0.184	0.074
Deteriorated	0.026	0.078	0.197

Situation related to domestic abuse

Round 1 \ Round 2	Improved	Unchanged	Deteriorated
Improved	0.025	0.158	0.000
Unchanged	0.366	0.237	0.013
Deteriorated	0.001	0.008	0.191

Source: Rounds one and two of the high frequency mobile phone surveys.

7.3 Child Discipline

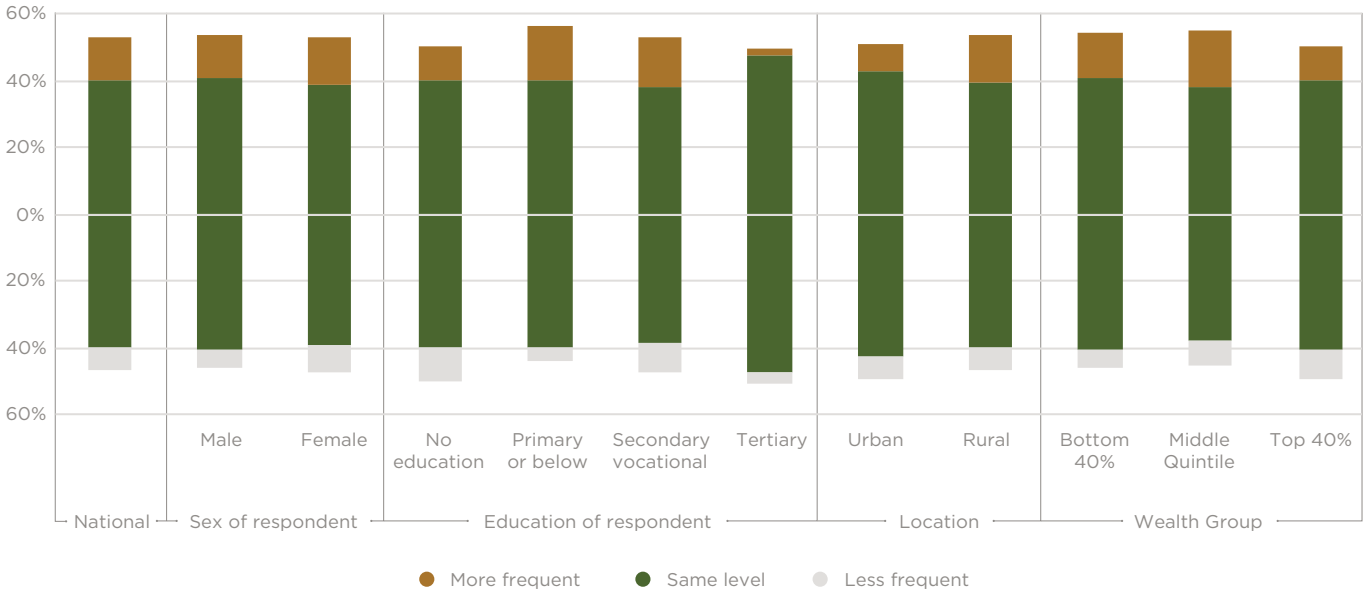
The belief that discipline was necessary for children, including at least occasional physical punishment, was widespread among caregivers and other adults. Unsurprisingly, the vast majority (96.1 percent) of adults and caregivers surveyed in the UNICEF survey believed in order to raise or educate a child properly, a child sometimes needs to be disciplined. This finding was consistent across geography, wealth, sex and, for the most part, the education of the respondent. The only significant exception was those with tertiary or higher education, of which 80.3 percent indicated support for the above statement. In response to the question as to whether in order to raise or educate a child properly the child sometimes needs to be physically punished, respondents had lower levels of agreement but still a large majority of respondents (82.2 percent). A significantly lower percentage of those with tertiary education indicated support but still a majority at 65.6 percent. Otherwise there was little variation across respondent characteristics.

Suspension of privileges and physical discipline within the household were commonly cited as being used by adults in the 15 days prior to the survey. The UNICEF survey randomly selected one child aged 3 or older in the household and covered five ways that child could be disciplined to teach proper behavior or the address a child's behavior problem: took away privileges; forbade something the child liked, or did not allow them to leave the house for a period of time; called the child dumb, lazy or another similar term; shook the child; spanked, hit or slapped the child with bare hand (or foot); or spanked or hit the child with an object. Hitting the child with a bare hand was the most common practice, cited as having been used by 40.0 percent of respondents, followed by taking away privileges, cited by 39.2 percent, and hitting the child with an object, cited by 26.5 percent. The two other punishments were less common, with 13.0 percent saying that the child was called dumb or lazy and 7.0 percent saying the child had been shook. Descriptive statistics show very few differences across the age or sex of the child, the sex or education of the respondent, household wealth or geographic characteristics. Econometric analysis, however, showed that respondents with tertiary education were less likely to report that the child had been hit than the reference group with secondary education, either with a bare hand or with an object, but that younger children (age 3-5 and 6-8) were more likely to be hit with an object compared to children age 12 to 14. See Table 14 for full regression results.

7.4 Intra-household conflict

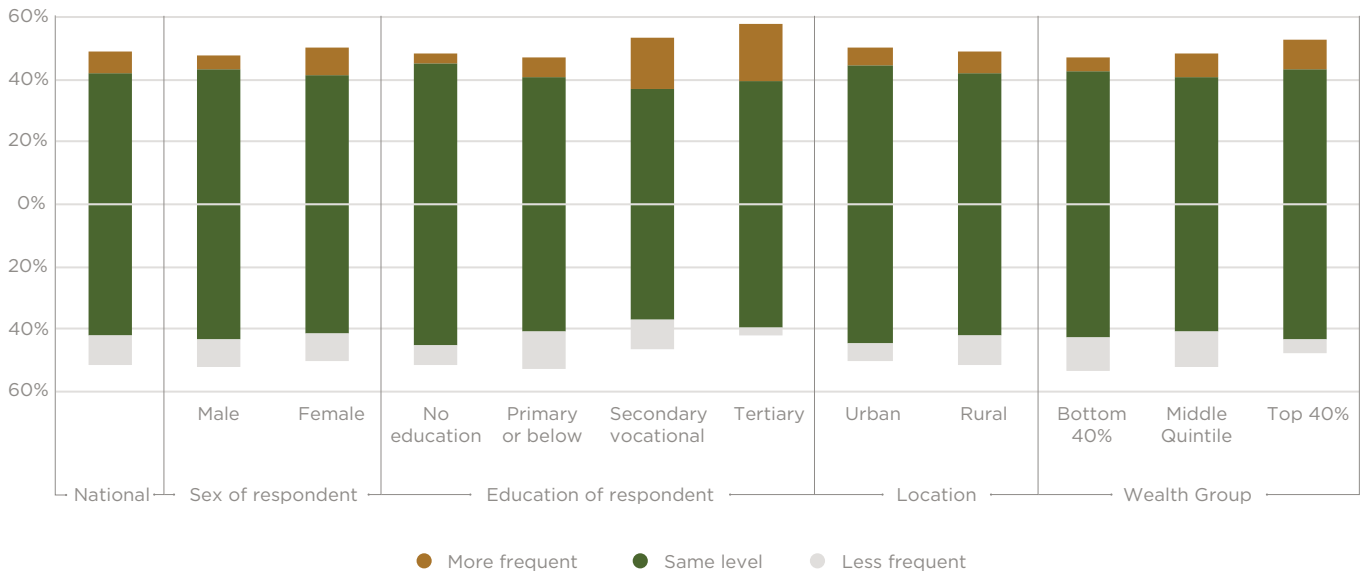
The vast majority of UNICEF survey respondents believed that intra-household conflict in the community had remained the same since school closings and the State of Emergency began. Intra-household conflict was measured with two indicators in the UNICEF survey: physical discipline for children in the community and disagreements between household members in the community. Nationally 84.3 percent of respondents indicated that the incidence of physical discipline within households in the community had remained the same since the start of the State of Emergency, with 6.6 percent saying that it had increased and 9.1 percent saying that it had decreased. Descriptive analysis, as shown as Figure 36 below, and econometric analysis, as shown in Table 15, show that respondents with higher levels of education (secondary and tertiary) were more likely to indicate that physical discipline for children in the community had increased, as were those living in rural areas. Households in the bottom 40 percent and the middle quintile were both more likely to say that there had been a decrease in physical discipline in households compared to those in the top 40 percent. For the question on frequency of arguments within households, nationally 79.9 percent of respondents indicated that the situation had remained unchanged since the State of Emergency, with 13.2 percent saying that the frequency had increased and 6.8 percent saying that they had decreased. As shown in Figure 37 below and in further analysis in Table 15, those with tertiary or higher education were less likely to say that household disagreements had increased as well as larger households being more likely to indicate that household arguments had decreased.

Figure 36. Change in frequency of physical discipline for children in your community since March 2020



Source: UNICEF mobile phone survey.

Figure 37. Change in frequency of arguments and disagreement between family members in your community since March 2020



Source: UNICEF mobile phone survey.

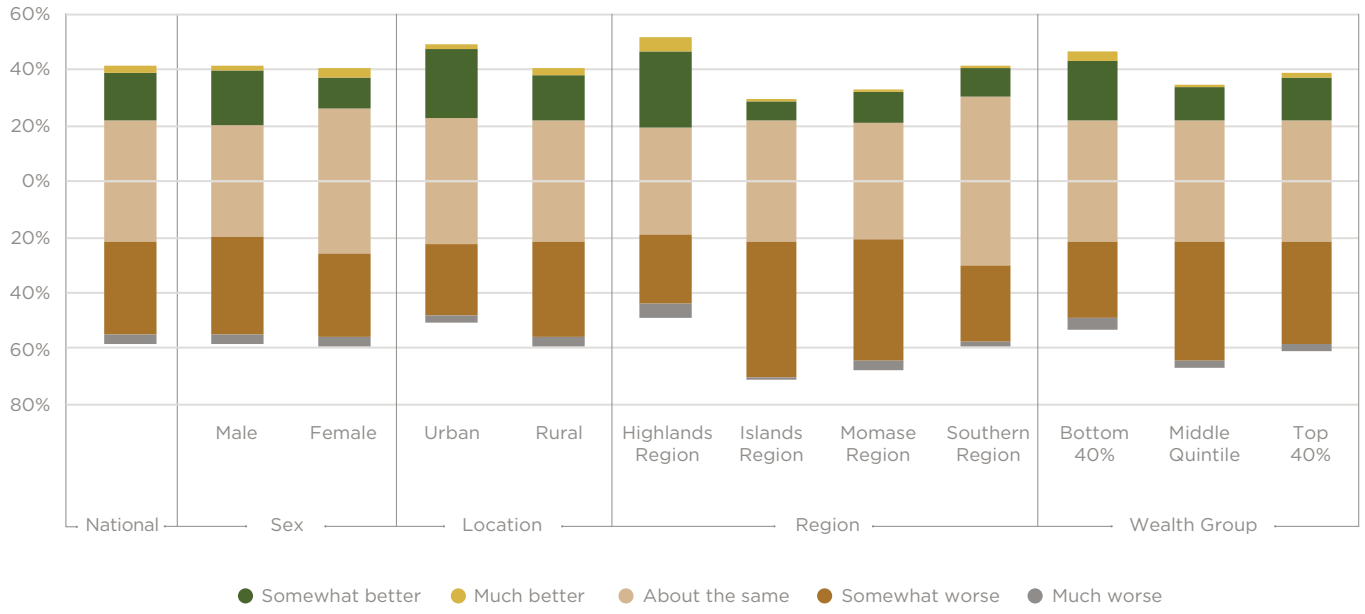
7.5 Changes in Child Behavior

More than one-third of children covered in the UNICEF survey had exhibited potentially negative behavior changes in the previous 15 days. The UNICEF survey covered six potentially negative behaviors: cried more than usual, speaking less well than he/she used to, been more withdrawn or very quiet more than usual, been irritable more than usual, acted defiant (not following the house rules) more than usual, and destroyed or damaging things more than usual. Nationally 35.1 percent of respondents indicated that the randomly selected child in their household had increased the frequency of at least one of these behaviors in the previous 15 days. The most common negative behavior was crying more than usual, cited by 18.2 percent of respondents. Descriptive and econometric analysis indicated that younger children and children living in rural areas were significantly more likely to exhibit this behavior, but no other differences across the sex of the child or the household wealth or geographic characteristics were found. The next most commonly cited behavior was being more irritable than usual, cited by 15.4 percent of respondents, and more common among boys than girls and children aged 6-8 years. Speaking less well was cited by 12.3 percent of households, and more common in rural areas, while being more withdrawn was cited by 8.4 percent of households and was more likely to be noted by male respondents. The final two behaviors, acting more defiant more than usual and destroying things more than usual, were cited by 5.1 percent and 5.2 percent, respectively. Both of these actions were more likely to be cited by respondents with secondary education compared with others with either higher or lower level of education. The full results of this analysis are presented in Table 16 in the appendix.

Optimism 8

Similar to round 1 of the World Bank survey, about two-thirds of respondents indicated they were neutral or optimistic about the state of the economy next year. There were, however, shifts within geographic and demographic groups. Those living in urban areas were less likely to believe the economy was going to get somewhat or much worse in the next year: 42.9 percent in round 1 compared to 27.8 percent in round 2. The share in rural areas increased marginally from 35.9 percent to 37.6 percent and the overwhelming share of the population living in rural areas lead the national figures to remain unchanged. Across regions, the percentages believing the economy would get worse remained largely unchanged, with 29.0 percent in the Southern region, 29.3 percent in the Highlands region, and 49.2 percent in the Islands region. There was an increase in the Momase region between rounds, between 38.8 percent in round 1 to 46.9 percent in round 2. There were also statistically significant shifts among the wealth groups, with the share among the bottom 40 percent believing things would get worse decreasing from 42.0 percent in round 1 to 31.3 percent in round 2 while increasing from 28.3 percent to 44.7 percent for the middle quintile. See Figure 38 below for the distribution across groups in round 2.

Figure 38. Expected state of the economy in the next month (by sex, location, and well-being status)



Source. Round two of the high frequency mobile phone survey

The majority of the UNICEF respondents thought the lives of children in their household had improved in the past year and the overwhelming majority believe that things will continue to improve. Despite recent challenges, 60.2 percent of overall respondents felt that the child's life had improved in the past year, compared with 37.0 who said things had remained the same, and 2.8 percent that believed things had gotten worse. Looking forward to one year ahead, 87.2 percent indicated that things would improve in the next year for the selected child and 12.8 percent indicated that things would remain the same. A negligible percentage of respondents thought things would get worse. There was minimal variation across household, respondent, and child characteristics.

Conclusions & Policy Recommendations 9

Nearly one year into the pandemic, COVID-19 remained a major health and financial concern for households. The majority of respondents were aware of COVID-19 and its effects, but still chose to go about their daily activities with varying degrees of risk mitigation through behavior change, mask wearing, and more frequent hand washing. Use of these preventative measures was higher in urban areas of the Southern region, mainly the NCD, likely because of the higher number of cases--and therefore perceived risk--as well as the more frequent contact with strangers compared to rural areas. While it remains to be seen if recent post-survey changes in case counts would increase the use of preventative measures, the results from both surveys identify a clear need to intensify risk communications and community engagement strategies in order to maintain high levels of risk perception and stress protective actions across the country: particularly mask wearing, hand washing, and avoiding large gatherings. Communication will be increasingly important as the country prepares to roll-out COVID-19 vaccines to generate and maintain a high demand for immunization and address information needs.

Despite a modest recovery between June and December led by the service sector, employment was still down by 28 percent over 2020. The workforce of 67 percent working in the January baseline dropped to 38 percent in June but rebounded to 48 percent by December. The service sector had the lowest net decline of the sectors, with 16 percent of the January baseline workforce not working in December: the strongest recovery since June, with nearly a quarter of the baseline workforce returning between June and December. Within the service sector, these trends were led by those working in retail and trading and bolstered to a lesser extent by the return of public sector employees in education and health care, as well as those in professional, scientific, and technical activities. The large share of women working in retail and trading which returned to work, combined with the stronger recovery in urban areas between June and December, contributed to faster recovery of women's employment compared to men. Women's employment was on par with men's in December, despite a lower starting point, but both groups were still down substantially from baseline levels. In addition, while there was also evidence of non-farm enterprises rebounding from initial declines, the recovery process is somewhat tenuous, slow, and uneven with those in the bottom 40 percent, and with limited education, reporting declines in income and returning to work at a slower rate. The next round of the survey will continue to follow these trends as differing rates of recovery can both exacerbate existing inequalities, increasing existing tensions within and between communities, as well as create groups of the "newly poor," which may require different ways of targeting support than those in chronic poverty.

Those working in agriculture continued to show substantial job losses. Agriculture employed the largest share of the population across the three periods, but also showed the highest net loss: 37 percent of the baseline workforce. These disproportionate losses in agriculture were also reflected in the slower recovery in rural areas as well as for those in the bottom 40 percent. While seasonality should not be an issue when comparing January and December 2020, it is still not possible to attribute the agricultural job losses to COVID-19 restrictions or even the associated general economic slowdown as weather patterns, and unrelated agricultural shocks, such as pests and disease, also likely contributed to the declines. In addition, nearly 20 percent of agricultural households expected lower or no income from their agricultural activities compared to the previous growing season, which was consistent with the findings that many households which produce crop or livestock for sale had seen recent declines in demand for their goods. In particular, female-headed households continued to more frequently report lower or no agricultural earnings for the current growing season.

Though there have been improvements in urban areas since June, food insecurity remains widespread and conditions in rural areas show early signs of deterioration. Food insecurity in urban areas declined from June levels but remained high, converging with those seen in rural areas. The declines in urban food

insecurity were likely driven by the stronger economic recovery in urban areas increasing the purchasing power of households as urban food availability continued to be minimally impacted by the COVID-19 crisis. In rural areas, food insecurity had marginally increased since June. Food availability seemed largely uninterrupted in rural areas as well but increasing shares of respondents indicated not being able to afford to purchase their preferred food items. There was also limited evidence of substitution by households away from more expensive or less accessible imported foods toward locally produced food, which could have potentially been a net benefit to poor rural households. In contrast, more households selling their agricultural production indicated decreases in demand rather than increases, and most substitution away from packaged food appeared to be towards home production.

On a positive note, intrahousehold food inequality did not appear to be a substantial issue, with minimal differences between men and women in individual level reports of food insecurity. Given nearly half of households reported at least one instance of food insecurity in the previous 30 days, targeted food aid may still be an effective solution, but the shift in insecurity towards rural and potentially more inaccessible areas complicates implementation. If logistically feasible, an approach which leverages local production may have dual benefits of decreasing transportation costs while bolstering rural agricultural markets.

The crisis has exacerbated existing issues and inequities in health care delivery. Though the surveys did not show widespread declines in health services outside of a few key groups, the baseline level of service delivery was already constrained pre-crisis, and even limited declines can be impactful to underserved populations. The percentages of those requiring routine care, such as family planning services or tuberculosis care, that were able to access the needed care were significantly lower in rural areas, particularly in the Highlands and Momase regions, and there were stark differences in access between the top 40 percent and the bottom 40 percent. Similar issues were seen in preventative care, including childhood vaccines and pre-natal care, where there were particular issues among those in the bottom 40 percent and in the Highlands region. Though it is not possible to directly attribute difficulties in accessing public services reported by survey respondents to the COVID-19 crisis, survey respondents reported declines in service availability for variety of sanitation and health services in the previous three months compared to what was usually available in their community. Given the scope of the current health crisis, continuing to strengthen health services, particularly to underserved community in the Highlands region and in poorer households, including the strengthening Village Health Volunteer policy for rural service delivery, remains a priority, as well as improving child health outcomes by prioritizing equitable, continuous, and safe access to child-centered services: especially nutrition, routine immunization, maternal and newborn care, education, and child protection programs.

Improvements to the water, sanitation, and hygiene (WASH) sector are a critical input to COVID-19 virus containment measures. At a time when handwashing is an important preventative measure to slow virus spread, between 20 and 50 percent of households with children did not have sufficient access to water in the week prior to the survey, and the majority did not have access to sufficient soap. Fully implementing the National WASH Policy to ensure access to water, sanitation, and hygiene facilities, including the establishment of the National Water Sanitation Hygiene Authority, would support the standardization of COVID-19 prevention activities in relation to water access and hygiene practices as well as facilitate sub-national Service Delivery Arrangements for WASH.

The slow recovery and potential recent further economic deterioration underscore the need to consider longer term mitigation strategies. Given the limited nature of the recovery between June and December, as well as the strong potential for further declines in the socio-economic situation of the vulnerable as a result of the current second wave of infections, programs and mechanisms to target and protect these groups in order to mitigate the direct and indirect effects of the pandemic become increasingly important. The lack of social protection systems is detrimental to the government's capacity to respond to the needs of vulnerable households. Expanding existing relief measures and working to create a robust social protection system that supports the poor and vulnerable across the life-cycle is urgently necessary in the short to medium terms to prevent loss in human capital and the economic fallout of the COVID-19 pandemic setting back development in PNG.

While the surveys did not show large deteriorations in public trust and security issues since June, experiences varied across geography and other demographic characteristics. Systematic declines were most evidence in the NCD compared to the rest of the country, where there were markedly higher shares of respondents indicated that the situation related to community trust, theft, alcohol and drug abuse, intimidation by police, violence by police, and domestic abuse had declined since June. Targeted outreach to vulnerable communities in the NCD, as well as those areas of the country which have seen tribal fighting over land disputes, for example, that may be too isolated an event to be adequately captured by a mobile phone survey could reduce tensions and prevent further escalation of volatile situations.

The crisis has had important impacts on children. The findings highlighted in this report demonstrate the considerable impact of COVID-19 on children. Using the available evidence for policy responses will protect children from the virus, promote the safe and continued access to services, and prevent children and their families from further economic hardship. Addressing these three aspects are critical to continue PNG's commitments to meeting the 2030 Agenda in advancing and protecting the rights and wellbeing of all children. To mitigate the impact of the crisis on children, priorities include: a national child-sensitive inclusive social protection and pubic finance for children framework built upon the scale-up of social evidence-based protection mechanisms (i.e. cash transfers and child grants); a defined national measurement of child poverty and government spending on child-centered essential services; and the safe participation of children in decision making through established mechanisms (i.e. school clubs and associations). In addition, it is important to protect children who are in and out of homes by: strengthening alternative care through finalizing the Out of Home Care Standards and Guidelines; providing practical support to parents and caregivers on positive parenting, especially during the COVID-19 pandemic; ensuring that remote learning takes place in the event of school closures; and strengthening the social welfare workforce. These are potentially important additional steps that can be taken to mitigate any long term damage to the next generation.

Strengthening the evidence base, including the regular production of household and economic statistics, remains vital to understanding the impacts of future crises. As noted in the round 1 report, understanding the impact of COVID-19 has been hampered by the lack of solid baseline data, including the lack of a recent census and Household Income and Expenditure Survey. While the mobile phone surveys meet an immediate need in gathering information for policymakers and development partners about the situation on the ground, these instruments have their limitations and are not a substitute for the regular collection of timely and high-quality data.

Appendix 1: Technical Appendix

A1.1. Instrument Design

The survey instrument for the World Bank survey was designed by the project team based on the round 1 questionnaire and the advice of the World Bank's COVID-19 questionnaire working group. The team also consulted with staff in the Sydney and Port Moresby offices, in particular the Health and Agriculture teams, as well as received feedback from other development partners. As in the first round, the length of the survey was targeted as 15 minutes and the survey instrument consisted of 177 questions, but only a sub-set of questions were asked to each household, with the number of questions for returning households being substantially shorter. The questionnaire included the following modules: Basic Information, Employment and Income Loss, Food Access and Food Security, Coping Strategies, Health, Public Trust and Security, and Assets and Wellbeing. As in the first round, if the respondent was not the household head, the Employment and Income Loss section included additional questions asking about the head of the household specifically.

The questionnaire for the UNICEF survey included sections on Basic Information, Knowledge and Behavior, Service Delivery, Roster of Children Living in the Household (including schooling status), Access to Health, Education, Child Discipline, and Life Perspectives, with the latter three sections being administered to a randomly selected child between the ages of 3-14. For retrospective questions on COVID-19 related knowledge, behavior and service delivery, this survey tracked households' activities in the last 7 days, 15 days, and the 3 months, depending on the question context, with the aim to observe both the short-term and long-term social challenges and hardship in PNG. For retrospective questions on child's education, the baseline is defined as the "2019 school year." To better distinguish the economic conditions in pre-COVID trend and the impact of shock during the COVID, households were asked about the baseline, the situation in March 2020 (before school closed as part of the first COVID-19 State of Emergency containment measures) and the current situation.

A1.2. Fieldwork and Implementation

Implementation was led by Digicel from their local call center. For both surveys, there was a staff of 18 interviewers and 1 supervisor. The dates of implementation were December 9th through December 31st, 2020, for the main survey and January 6 through January 24, 2021 for the UNICEF survey. The acceptance rate was very high for connected calls, with 2 respondents being under the minimum participation age of 18 years and 98 respondents (3 percent) refusing to participate in the main survey. The UNICEF survey was able to achieve a recontact rate of 96.6 percent of the targeted respondents. Data was collected and managed using the Survey Solutions software package.

A1.3. Sampling

A1.4.1 World Bank survey

The original objective of round 2 was to re-interview all households and respondents that were interviewed in round 1. There is high turnover of SIM cards in PNG, however, as numbers must be officially registered with a valid government ID within six months of activation or they are disconnected. Overall, of the original 3,115 households and 4,528 individuals interviewed during round 1, only 951 households and 962 individuals were re-interviewed in round 2. Though a small percentage of respondents refused (less than 1 percent), the main reason for failure to re-contact was that the number was no longer working. In addition, there were 67 households in which someone answered at the original mobile number, but they were not a part of the original household. Therefore 1,804 additional households were added for the second round, for a total sample size of 2,820 households and 3,368 individuals in round 2.

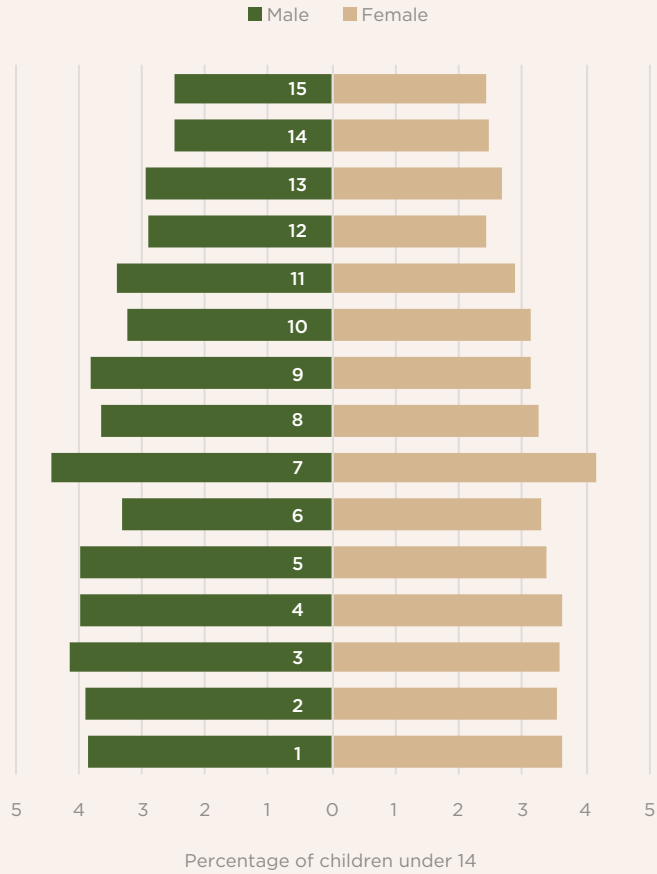
To attempt to address some of the issues seen in round 1 in terms of the skew towards the higher deciles of the wealth distribution, a different targeting mechanism was used in round 2 based on subscriber characteristics derived from the Digicel database to try to address some of the skew towards richer households seen in the first round. To proxy poor households, the team targeted subscribers that did not send text messages on the assumption they were less likely to be literate. Similarly, subscribers that received only incoming calls or for whom the majority of credit was not purchased but transferred from other subscribers were thought to be more likely to be poor. See results below in section A1.4.

A1.4.2. UNICEF survey

The UNICEF survey of households with children interviewed 2,449 of the 2,820 households interviewed in the second round of the World Bank survey, 86.8 percent of the total sample, and 96.6 percent of the total 2,534 that were targeted as having children under age 15. Using logit econometric model to compare the characteristics of eligible households which attritted between round 2 of the World Bank survey and the UNICEF survey, there are no statistically significant relationships accounting for the sex and education of the respondent, household wealth, and the geographic location (province, urban/rural), with the exception of a statistically significant higher probability of attrition from those living in East Sepik Province.

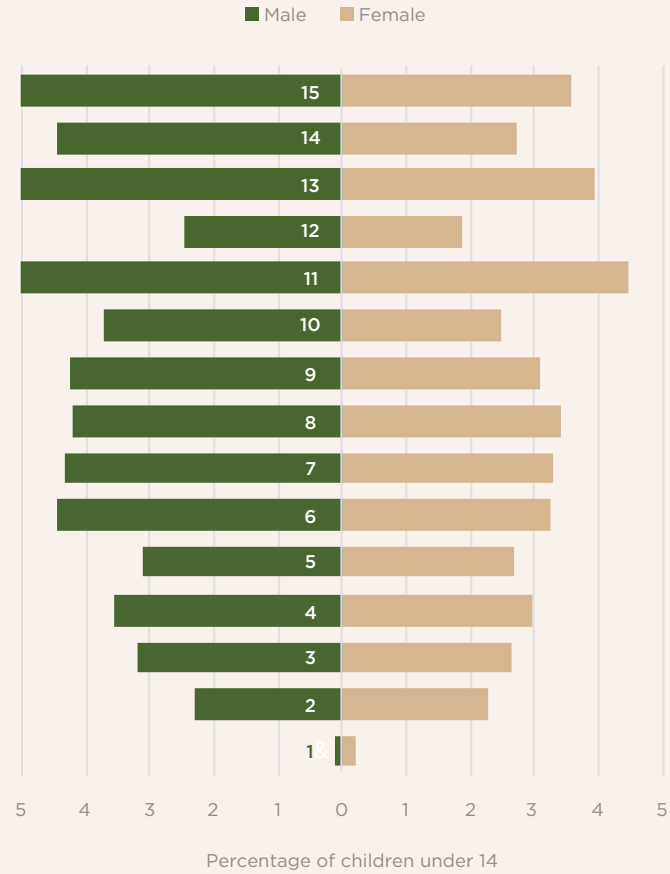
As part of the UNICEF questionnaire, a roster of children living in the household was collected. Information was collected on 5,974 children living in 2,444 households (5 households which had children at the time of the World Bank survey reported not having any living there at the time of the UNICEF survey), for an average of 2.4 children per household. This average was slightly below the 2016-2018 DHS household average of 2.6 children under the age of 15. Comparing the age pyramids in Figure 37 and Figure 38 below, the main driver of the differences appeared to be under-reporting of children under the age of 2. The remainder of the variation is within what could be expected due to sampling error.

Figure 39. Age pyramid DHS 2016-2018



Source: DHS 2016-2018

Figure 40. Age pyramid UNICEF mobile phone survey



Source: UNICEF mobile phone survey

From the child roster, one child between age 3 and 14 was randomly selected to be the subject of a detailed set of questions to the respondent on education, child discipline, and life perspectives. There were 2,439 children included in these sections, with the remaining 5 households only having a child age 2 or lower. Though secondary education begins at age 13, the sample included only 10 observations at this level. As this number of observations is insufficient for detailed analysis, this group was excluded from analysis for the majority of the education questions. Of those responding on behalf of the children, 71.7 percent were male. The majority of the respondents answering questions regarding the health and education of children where the primary caregivers of the children. Of the 2,439 children covered in the detailed child-response survey, 81.1 percent of the respondents identified themselves as the child's primary caregiver, with 69.8 percent of all respondents being a parent (including adopted and foster parents), 14.2 percent being a brother or sister, 9.0 percent being a grandparent, 6.6 percent being another relative, and 0.45 percent being someone not related to the child. The identification of the respondent as the primary caregiver is included in the regression analysis to control for potential inaccuracy in responses if the respondent was not the primary caregiver.

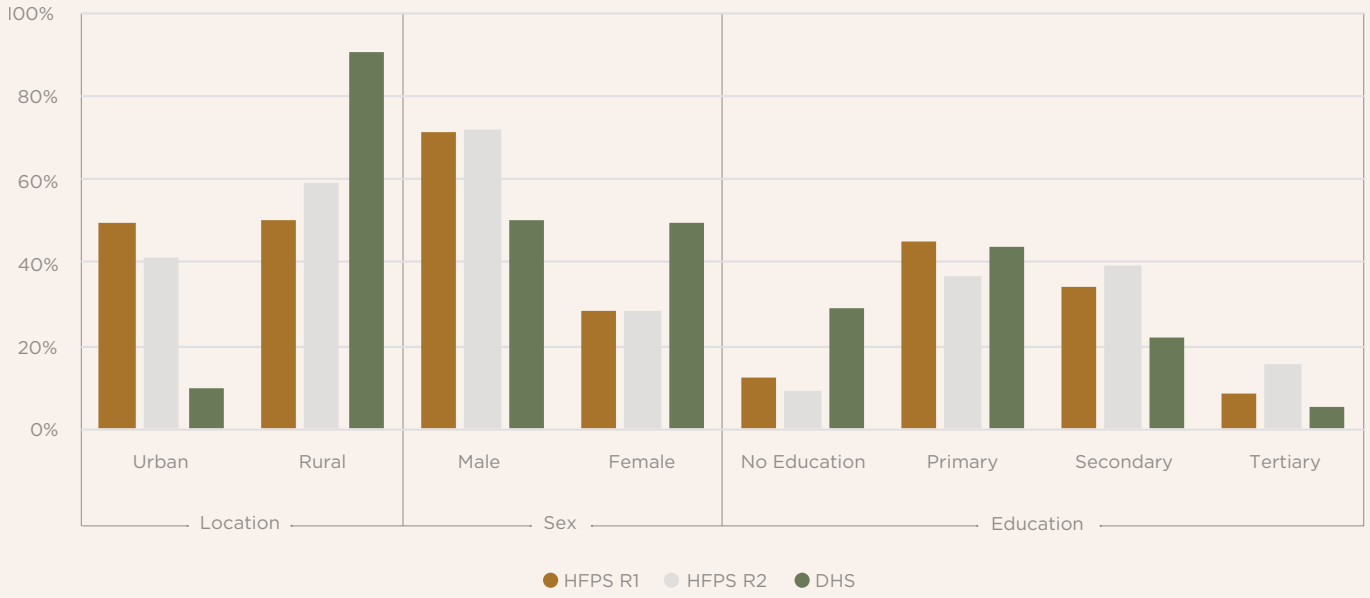
A1.4. Weighting

A1.4.1 World Bank Survey

In round 1, there were two sets of primary weights calculated: those at the individual level and those at the household level. For the second round, there are four sets of primary weights: cross section weights at the household level, panel weights at the household level, cross section weights at the individual level, and panel weights at the individual level. Given the high levels of attrition, the panel weights were only used for selected analysis (as noted in the main text) and the majority of the analysis relied on cross sectional weights.

The data collected from the mobile phone surveys differed substantially from the characteristics of the population as a whole (see Figure 39 below), the data required reweighting. The process for reweighting was similar to that used in round 1 (see technical appendix to that report for full details).

Figure 41. Distribution of unweighted observations across individual characteristics compared to DHS wealth index



Source: 2016-2018 DHS and rounds one and two of the high frequency mobile phone survey.

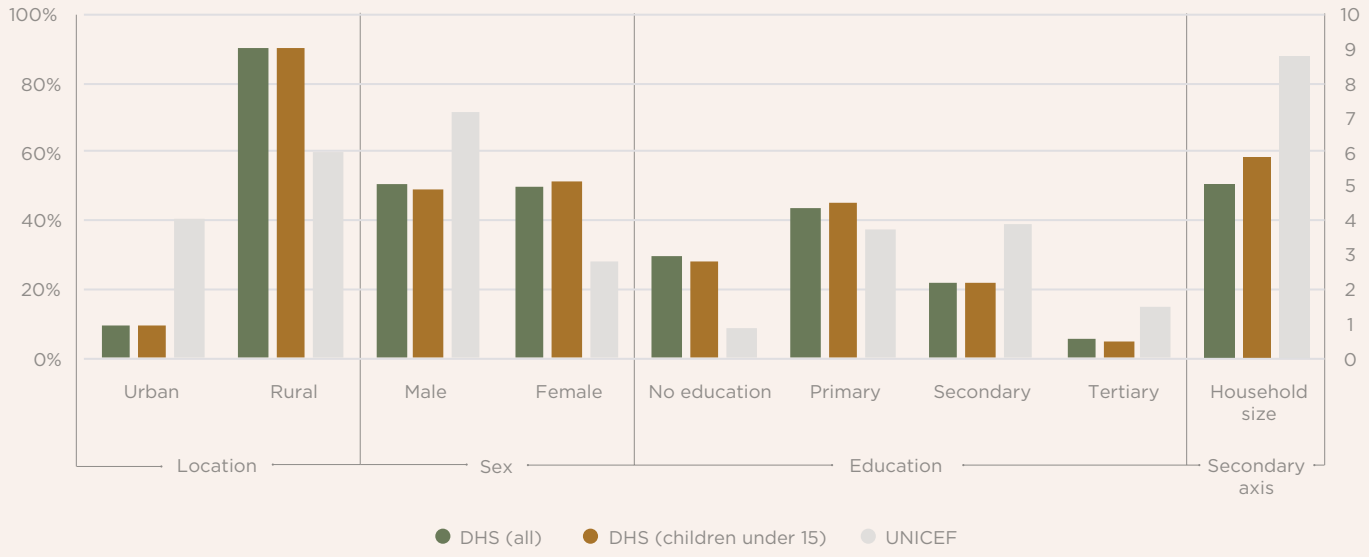
As noted above, the economic targeting employed in round 2 was able to improve the wealth distribution of the sample over the round 1 results compared to that of the 2016-2018 DHS. The mean of the wealth index prior to weighting in round 1 was 0.330 (CI: 0.319, 0.340) compared to the weighted mean in the DHS of 0.0799 (CI: 0.698, 0.090). The unweighted mean of the wealth index for household captured in both round 1 and round 2 was 0.339 (CI: 0.322, 0.357), indicating that the households which attritted from the sample were more likely to be lower on the wealth distribution. Most of these households were replaced by new targeted random households, but a small share were those respondents that had a phone number common to a round 1 household but for which the round 2 respondent was not a member of that household. The unweighted mean wealth index for the convenience replacement respondents was 0.272 (CI: 0.206, 0.338), indicating that there were less well off than the average round 1 respondent. This finding may be the result of these households receiving older phones from more well-off friends and family and inheriting the associated SIM card. The targeted replacement sample, however, had a mean wealth index of 0.220 (CI: 0.207, 0.233), which was significantly lower than the mean for the returning households, the round 1 mean, and the convenience replacement sample, demonstrating the effectiveness of the targeting approach. Figure 40 below compares the distribution across deciles for the DHS wealth index for the round 1 and round 2 respondents.

Figure 42. Distribution of unweighted round 1 and round 2 observations across deciles of DHS wealth index

Source: 2016-2018 DHS and rounds one and two of the high frequency mobile phone survey.

To ensure proper comparability, the UNICEF survey was reweighted to the population means of those households with children under age 15 in the 2-16-2018 DHS. As above, this process requires reweighting across a number of categories to mitigate the potential respondent bias inherent to mobile phone surveys. In addition, there are some differences between the national population of the DHS and the subsample of the DHS with children under age 15, particularly with regard to household size. (See Figure 41 below.) Therefore, the sample of the UNICEF survey is not nationally representative but is rather representative of households with children.

Figure 43. Distribution of unweighted UNICEF observations across characteristics of DHS (national and households with children)



Source: 2016-2018 DHS and UNICEF mobile phone survey.

Appendix 2: Tables

Table 1. COVID cases by province (as of January 15, 2021)

Provinces[20]	Cases
National Capital District	365
Western	213
West New Britain	156
East New Britain	30
New Ireland	18
Eastern Highlands	13
Western Highlands	10
Central	10
Morobe	6
East Sepik	3
Enga	3
Milne Bay	2
West Sepik	2
Southern Highlands	1
Autonomous Region of Bougainville	1
Hela	1
Total	**834**

https://covid19.info.gov.pg/index.php/2021/01/15/western-province-recorded-one-new-covid-19-case-bringing-pngs-total-cases-to-834/

Table 2. Protective measures taken in previous 7 days

	Avoid handshakes of physical greetings?	Avoid groups of more than 10 people, such as family gatherings, parties, church, funerals, etc.?	Stock up on food more than normal?	Reduce the number of times you went to the market or grocery store?	Avoid travel in crowded public transport?	Any of the methods?
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female respondent	0.039	-0.045	-0.035	-0.125**	0.094	0.013
	(0.064)	(0.055)	(0.055)	(0.056)	(0.060)	(0.058)
Reference: Secondary / Vocational education						
No education	0.187**	-0.040	0.056	-0.026	0.193**	0.159**
	(0.085)	(0.082)	(0.070)	(0.082)	(0.090)	(0.079)
Primary or below	0.141**	0.065	0.122*	0.061	0.060	0.102*
	(0.068)	(0.067)	(0.063)	(0.070)	(0.066)	(0.062)
Tertiary	0.133	0.182	0.194	0.123	-0.035	0.078
	(0.123)	(0.119)	(0.123)	(0.116)	(0.117)	(0.104)
Reference: Southern region - urban						
Highlands - urban	-0.379**	0.074	0.049	0.010	-0.202	-0.547***
	(0.179)	(0.118)	(0.096)	(0.121)	(0.183)	(0.137)
Islands - urban	0.098	0.349**	0.315*	0.409***	-0.079	-0.031
	(0.194)	(0.147)	(0.161)	(0.147)	(0.200)	(0.129)
Momase - urban	-0.295*	0.119	0.086	0.152	0.177	-0.048
	(0.172)	(0.101)	(0.087)	(0.124)	(0.220)	(0.125)
Highlands - rural	-0.083	0.301***	0.177**	0.199**	-0.031	-0.137
	(0.169)	(0.085)	(0.077)	(0.091)	(0.197)	(0.098)
Islands - rural	-0.050	0.392***	0.275***	0.229**	-0.055	-0.070
	(0.173)	(0.107)	(0.091)	(0.107)	(0.198)	(0.108)
Momase - rural	-0.167	0.223**	0.178*	0.328***	0.040	-0.141
	(0.175)	(0.095)	(0.093)	(0.109)	(0.202)	(0.114)
Southern - rural	-0.033	0.225**	0.224**	0.334***	0.233	0.018
	(0.180)	(0.105)	(0.103)	(0.117)	(0.205)	0.116)
Reference: Top 40 percent						
Bottom 40 percent	-0.126	-0.140*	-0.006	-0.054	0.001	0.010
	(0.089)	(0.081)	(0.077)	(0.081)	(0.084)	(0.079)
Middle quintile	-0.046	-0.013	0.111	-0.066	-0.077	0.060
	(0.085)	(0.081)	(0.080)	(0.079)	(0.077)	(0.070)
Constant	0.442***	0.135	0.016	0.211**	0.146	0.713***
	(0.164)	(0.088)	(0.079)	(0.099)	(0.191)	(0.102)
Observations	2,446	2,446	2,446	2,446	2,446	2,446
Adjusted R2	0.045	0.065	0.043	0.059	0.070	0.043

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 3. Practice of handwashing and mask wearing (ordered logit)

	Wash your hands with soap after being in public	Wear a face mask when in public place
	coef/se	coef/se
Female respondent	0.213	0.458*
	(0.253)	(0.247)
Reference: Secondary / Vocational education		
No education	0.470	0.183
	(0.353)	(0.364)
Primary or below	0.210	0.165
	(0.273)	(0.267)
Tertiary	0.344	0.142
	(0.428)	(0.412)
Reference: Southern region - urban		
Highlands - urban	1.606	2.343*
	(1.148)	(1.347)
Islands - urban	1.480	1.378
	(1.094)	(1.079)
Momase - urban	1.700	1.785
	(1.050)	(1.138)
Highlands - rural	2.683**	2.477**
	(1.092)	(1.087)
Islands - rural	2.337**	1.681
	(1.060)	(1.038)
Momase - rural	2.443**	2.978***
	(1.085)	(1.094)
Southern - rural	2.275**	2.145**
	(1.102)	(1.078)
Reference: Top 40 percent		
Bottom 40 percent	-0.023	0.220
	(0.317)	(0.310)
Middle quintile	0.128	0.403
	(0.338)	(0.308)
Cut1	-0.224	-0.392
	(1.074)	(1.078)
Cut2	0.682	0.449
	(1.017)	(1.001)
Cut3	1.432	1.036
	(0.997)	(0.994)
Cut4	4.116***	2.848***
	(1.003)	(1.004)
Observations	2,446	2,446

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 4. Regression analysis for employment outcomes

	Job lost / Working for No Income		Working for Reduced Pay		Working for Higher Income	
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female headed household	-0.015	-0.071	0.142*	0.148**	-0.273*	-0.289**
	(0.142)	(0.141)	(0.076)	(0.064)	(0.156)	(0.137)
Female respondent	-0.015	-0.132	0.049	-0.000	-0.342**	-0.327**
	(0.184)	(0.156)	(0.071)	(0.066)	(0.157)	(0.136)
Female headed household * Female	-0.156	0.032	0.016	0.037	0.435**	0.386***
	(0.199)	(0.166)	(0.101)	(0.095)	(0.182)	(0.146)
Reference: Agriculture						
Industry	0.060	0.130	-0.067	-0.069	0.007	0.050
	(0.105)	(0.099)	(0.058)	(0.058)	(0.113)	(0.083)
Service	-0.061	-0.049	0.047	0.070	0.029	0.010
	(0.081)	(0.070)	(0.054)	(0.054)	(0.056)	(0.026)
Employed full-time			0.097*	0.043	0.007	-0.027
			(0.054)	(0.053)	(0.052)	(0.033)
Formal sector			-0.175***	-0.166***	-0.094	-0.034
			(0.056)	(0.051)	(0.066)	(0.030)
Reference: Top 40 percent						
Bottom 40 percent	0.107	0.104	0.079	0.044	-0.117*	-0.043
	(0.081)	(0.068)	(0.068)	(0.074)	(0.068)	(0.049)
Middle quintile	0.078	0.055	0.120**	0.078	-0.168***	-0.071
	(0.086)	(0.067)	(0.055)	(0.063)	(0.063)	(0.045)
Reference: Some or completed secondary						
No education	0.147	0.037	0.238***	0.160*	-0.117*	-0.068**
	(0.102)	(0.079)	(0.089)	(0.084)	(0.069)	(0.035)
Some or completed primary	0.027	0.003	0.039	0.056	-0.007	-0.002
	(0.071)	(0.057)	(0.049)	(0.050)	(0.059)	(0.036)
Post-secondary education	0.021	0.032	0.205**	0.153**	-0.181*	-0.083
	(0.081)	(0.079)	(0.103)	(0.071)	(0.095)	(0.054)
Rural	0.072	0.058	-0.057	0.051	-0.028	-0.128**
	(0.063)	(0.072)	(0.058)	(0.052)	(0.078)	(0.053)
Constant	0.221	0.163	-0.126*	0.131	0.493***	0.321**
	(0.145)	(0.158)	(0.075)	(0.165)	(0.174)	(0.143)
Province level fixed effects	no	yes	no	yes	no	yes
Observations	2,417	2,417	1,824	1,824	1,824	1,824
Adjusted R2	0.0833	0.2935	0.1641	0.2487	0.1771	0.4361

note: *** p<0.01, ** p<0.05, * p<0.1

Source: Round two of the high frequency mobile phone survey.

Table 5. Inability to access food item in rural areas

	Starch		Protein		Fruits / Vegetables
	coef/se	coef/se	coef/se	coef/se	coef/se
Female headed household	0.229**	0.217*	0.166*	0.076	0.158
	(0.113)	(0.120)	(0.093)	(0.060)	(0.100)
Reference: Southern region					
Highlands	0.168**	0.162*	0.252***	0.137***	0.160***
	(0.079)	(0.097)	(0.061)	(0.053)	(0.062)
Islands	0.014	0.037	0.043	0.035	0.002
	(0.057)	(0.075)	(0.044)	(0.030)	(0.036)
Momase	0.089	0.116	0.172***	0.101*	0.109**
	(0.068)	(0.100)	(0.059)	(0.052)	(0.048)
Reference: Top 40 percent					
Bottom 40 percent	0.158**	0.163*	0.191***	0.066	0.080
	(0.078)	(0.084)	(0.064)	(0.044)	(0.053)
Middle quintile	0.094	0.096	0.088*	0.085**	0.048
	(0.063)	(0.069)	(0.051)	(0.041)	(0.045)
Constant	-0.088*	-0.078	-0.113***	-0.114**	-0.073*
	(0.050)	(0.109)	(0.044)	(0.046)	(0.041)
Observations	731	731	1,152	1,152	866
Adjusted R2	0.1599	0.1815	0.1487	0.4358	0.1082
Food item fixed effects	no	yes	no	yes	no

note: *** p<0.01, ** p<0.05, * p<0.1

Source. Round two of the high frequency mobile phone survey.

Table 6. Food insecurity characteristics - urban

	Worried about having enough to eat		Unable to eat healthy and nutritious food		Eat only a few kinds of food	
	individual	household	individual	household	individual	household
Female respondent	0.173*		0.043		0.161*	
	(0.099)		(0.084)		(0.087)	
Female headed household		0.127		0.023		0.122
		(0.116)		(0.095)		(0.099)
Reference: Southern region						
Highlands	0.234	0.231*	0.004	0.007	0.126	0.142
	(0.147)	(0.140)	(0.112)	(0.112)	(0.118)	(0.118)
Islands	0.249*	0.207	0.250*	0.252*	0.345***	0.398***
	(0.138)	(0.147)	(0.133)	(0.134)	(0.125)	(0.133)
Momase	0.353***	0.306**	0.427***	0.433***	0.429***	0.435***
	(0.121)	(0.127)	(0.105)	(0.105)	(0.105)	(0.107)
Reference: Top 40 percent						
Bottom 40 percent	-0.158	-0.131	-0.052	-0.058	-0.088	-0.115
	(0.141)	(0.138)	(0.125)	(0.124)	(0.136)	(0.138)
Middle quintile	-0.186	-0.203	-0.299***	-0.304***	-0.173	-0.192
	(0.129)	(0.133)	(0.115)	(0.115)	(0.134)	(0.138)
Household participates in agriculture	-0.049	-0.071	-0.099	-0.108	0.028	0.018
	(0.103)	(0.100)	(0.092)	(0.092)	(0.098)	(0.098)
Constant	0.254**	0.349***	0.268***	0.284***	0.141*	0.182**
	(0.101)	(0.107)	(0.092)	(0.088)	(0.085)	(0.084)
Observations	1,158	1,158	1,158	1,158	1,158	1,158
Adjusted R2	0.1399	0.1059	0.2087	0.2129	0.1762	0.1735

Source: Round two of the high frequency mobile phone survey.

Food insecurity characteristics – urban (continued)

	Have to skip meal		Hungry but did not eat		No eating for the whole day		Ran out of food
	individual	household	individual	household	individual	household	household
Female respondent	0.134		0.141*		0.075		
	(0.090)		(0.085)		(0.062)		
Female headed household		0.092		0.103		0.017	0.007
		(0.101)		(0.098)		(0.074)	(0.102)
Reference: Southern region							
Highlands	0.107	0.115	0.031	0.031	0.027	0.018	0.030
	(0.117)	(0.118)	(0.107)	(0.107)	(0.071)	(0.070)	(0.107)
Islands	0.390***	0.395***	0.252**	0.291**	0.274**	0.302***	0.251**
	(0.129)	(0.134)	(0.122)	(0.129)	(0.108)	(0.111)	(0.123)
Momase	0.435***	0.434***	0.381***	0.398***	0.099	0.129*	0.292***
	(0.105)	(0.107)	(0.108)	(0.108)	(0.071)	(0.073)	(0.112)
Reference: Top 40 percent							
Bottom 40 percent	-0.128	-0.138	-0.066	-0.037	0.235	0.267*	0.011
	(0.143)	(0.145)	(0.135)	(0.127)	(0.162)	(0.155)	(0.167)
Middle quintile	-0.251*	-0.255*	-0.285**	-0.263**	0.015	0.022	-0.237**
	(0.132)	(0.136)	(0.113)	(0.116)	(0.066)	(0.070)	(0.115)
Household participates in agriculture	0.068	0.053	-0.038	-0.047	-0.139**	-0.157***	-0.006
	(0.096)	(0.095)	(0.095)	(0.095)	(0.055)	(0.058)	(0.099)
Constant	0.171**	0.209**	0.172**	0.204**	0.080	0.116**	0.208***
	(0.086)	(0.086)	(0.085)	(0.083)	(0.055)	(0.052)	(0.079)
Observations	1,158	1,158	1,158	1,158	1,158	1,158	1,158
Adjusted R2	0.1826	0.1732	0.1849	0.1837	0.1233	0.1334	0.0979

Source: Round two of the high frequency mobile phone survey.

Table 7. Food insecurity characteristics - rural

	Worried about having enough to eat		Unable to eat healthy and nutritious food		Eat only a few kinds of food	
	individual	household	individual	household	individual	household
Female respondent	0.005		-0.004		0.034	
	(0.074)		(0.075)		(0.076)	
Female headed household		-0.092		-0.098		-0.095
		(0.086)		(0.087)		(0.089)
Reference: Southern region						
Highlands	-0.054	-0.024	-0.061	-0.046	-0.060	-0.054
	(0.113)	(0.115)	(0.113)	(0.116)	(0.113)	(0.115)
Islands	0.072	0.115	0.050	0.095	0.058	0.098
	(0.114)	(0.114)	(0.113)	(0.114)	(0.115)	(0.114)
Momase	0.175	0.177	0.146	0.130	0.164	0.152
	(0.108)	(0.111)	(0.109)	(0.112)	(0.108)	(0.111)
Reference: Top 40 percent						
Bottom 40 percent	0.032	0.033	0.036	0.028	0.005	-0.010
	(0.082)	(0.083)	(0.083)	(0.084)	(0.083)	(0.083)
Middle quintile	-0.018	-0.031	0.015	-0.020	0.003	-0.024
	(0.084)	(0.084)	(0.084)	(0.084)	(0.085)	(0.084)
Household participates in agriculture	0.101	0.116	0.090	0.114	0.080	0.084
	(0.073)	(0.072)	(0.073)	(0.073)	(0.073)	(0.073)
Constant	0.312***	0.339***	0.323***	0.351***	0.333***	0.394***
	(0.109)	(0.109)	(0.109)	(0.109)	(0.110)	(0.109)
Observations	1,662	1,662	1,662	1,662	1,662	1,662
Adjusted R2	0.0448	0.0524	0.0360	0.0443	0.0381	0.0465

Source: Round two of the high frequency mobile phone survey.

Food insecurity characteristics - rural (continued)

	Have to skip meal		Hungry but did not eat		No eating for the whole day		Ran out of food
	individual	household	individual	household	individual	household	household
Female respondent	0.028		0.035		0.033		
	(0.075)		(0.073)		(0.072)		
Female headed household		-0.102		-0.070		-0.045	-0.080
		(0.088)		(0.088)		(0.086)	(0.087)
Reference: Southern region							
Highlands	-0.057	-0.058	0.017	-0.069	0.157*	0.078	-0.158
	(0.113)	(0.116)	(0.101)	(0.115)	(0.083)	(0.103)	(0.116)
Islands	0.045	0.083	0.061	0.034	0.212***	0.216**	-0.070
	(0.114)	(0.114)	(0.104)	(0.112)	(0.080)	(0.096)	(0.109)
Momase	0.170	0.158	0.217**	0.125	0.270***	0.194*	0.026
	(0.108)	(0.111)	(0.099)	(0.111)	(0.083)	(0.100)	(0.113)
Reference: Top 40 percent							
Bottom 40 percent	0.012	-0.009	-0.004	0.010	0.116*	0.138*	0.115
	(0.083)	(0.083)	(0.077)	(0.083)	(0.069)	(0.078)	(0.081)
Middle quintile	-0.004	-0.030	-0.024	-0.029	0.041	0.038	0.053
	(0.084)	(0.083)	(0.082)	(0.082)	(0.073)	(0.076)	(0.080)
Household participates in agriculture	0.075	0.090	0.116	0.081	0.065	0.051	0.045
	(0.073)	(0.072)	(0.070)	(0.073)	(0.068)	(0.072)	(0.072)
Constant	0.340***	0.398***	0.233**	0.377***	0.018	0.128	0.399***
	(0.110)	(0.109)	(0.105)	(0.108)	(0.085)	(0.090)	(0.108)
n	1,662	1,662	1,662	1,662	1,662	1,662	1,662
Adjusted R2	0.0378	0.0505	0.0431	0.0373	0.0514	0.0420	0.0416

Source: Round two of the high frequency mobile phone survey.

Table 8. Disruption to access in public services

	Water supply/ service	Sanitation supply/ service	Mental health & psychosocial support services	Health care services	Family planning services
	coef/se	coef/se	coef/se	coef/se	coef/se
Female respondent	0.048	-0.022	-0.028	0.003	0.053
	(0.052)	(0.054)	(0.052)	(0.064)	(0.060)
Reference: Secondary / Vocational education					
No education	0.005	0.005	0.010	-0.031	0.063
	(0.076)	(0.084)	(0.078)	(0.087)	(0.080)
Primary or below	-0.030	-0.094	-0.105*	-0.026	-0.043
	(0.060)	(0.064)	(0.061)	(0.069)	(0.063)
Tertiary	-0.003	-0.094	-0.048	-0.055	-0.062
	(0.110)	(0.111)	(0.110)	(0.125)	(0.105)
Reference: Southern region - urban					
Highlands - urban	0.069	-0.076	-0.061	0.375**	0.104
	(0.192)	(0.133)	(0.101)	(0.186)	(0.190)
Islands - urban	-0.115	-0.047	-0.041	0.094	0.034
	(0.137)	(0.143)	(0.104)	(0.151)	(0.146)
Momase - urban	0.140	0.113	0.052	0.083	0.117
	(0.168)	(0.162)	(0.129)	(0.141)	(0.150)
Highlands - rural	-0.047	0.061	0.009	0.116	0.011
	(0.137)	(0.138)	(0.116)	(0.121)	(0.131)
Islands - rural	-0.073	0.051	0.130	0.214*	0.114
	(0.129)	(0.140)	(0.114)	(0.129)	(0.131)
Momase - rural	-0.004	0.077	0.046	0.125	0.020
	(0.143)	(0.145)	(0.122)	(0.130)	(0.136)
Southern - rural	0.072	0.185	0.214	0.258*	0.190
	(0.151)	(0.154)	(0.132)	(0.139)	(0.145)
Reference: Top 40 percent					
Bottom 40 percent	0.019	-0.052	0.064	0.052	0.136
	(0.076)	(0.076)	(0.078)	(0.088)	(0.085)
Middle quintile	0.129	0.089	0.105	0.048	0.117
	(0.080)	(0.079)	(0.078)	(0.082)	(0.077)
Constant	0.195	0.248*	0.167	0.201*	0.099
	(0.129)	(0.135)	(0.109)	(0.120)	(0.126)
Observations	2,446	2,446	2,446	2,446	2,446
Adjusted R2	0.031	0.035	0.043	0.021	0.033

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 9. Issues with water & sanitation

	OLS	OLS	OLS	Ordered logit
	Did not have sufficient drinking water to meet household needs	Did not have sufficient water for handwashing to meet household needs	Did not have sufficient soap to wash hands when needed	The availability of soap or detergent for your household increased, remained the same or decreased
	coef/se	coef/se	coef/se	coef/se
Reference: Southern region - urban				
Highlands - urban	-0.147	-0.319	0.271	-0.779
	(0.252)	(0.219)	(0.213)	(1.046)
Islands - urban	-0.229	-0.226	0.383**	-0.117
	(0.221)	(0.221)	(0.167)	(0.984)
Momase - urban	-0.102	-0.181	0.343**	-1.498*
	(0.229)	(0.228)	(0.171)	(0.838)
Highlands - rural	-0.309	-0.302	0.300**	-0.985
	(0.200)	(0.200)	(0.141)	(0.848)
Islands - rural	-0.289	-0.337	0.336**	-1.058
	(0.207)	(0.207)	(0.143)	(0.897)
Momase - rural	-0.278	-0.247	0.263*	-1.055
	(0.202)	(0.202)	(0.149)	(0.870)
Southern - rural	-0.271	-0.266	0.306**	-1.276
	(0.208)	(0.207)	(0.153)	(0.916)
Reference: Top 40 percent				
Bottom 40 percent	-0.022	-0.024	-0.102	0.533
	(0.071)	(0.070)	(0.084)	(0.394)
Middle quintile	0.018	0.003	-0.063	0.591*
	(0.074)	(0.072)	(0.080)	(0.355)
Constant	0.506***	0.506***	0.277**	
	(0.192)	(0.191)	(0.123)	
Cut1				-4.053***
				(0.854)
Cut2				0.099
				(0.795)
Observations	2,446	2,446	2,446	2,446
Adjusted R2	0.027	0.023	0.019	

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 10. School attendance by year and urban-rural status

	urban				rural			
	2019 school year		2020 pre-pandemic		2019 school year		2020 pre-pandemic	
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female student	0.065	0.026	0.103	0.085	0.040	0.030	0.016	0.009
	(0.077)	(0.059)	(0.075)	(0.056)	(0.037)	(0.033)	(0.034)	(0.029)
Reference: Student age 12-14								
Student age 6-8	-0.499***	-0.426***	-0.234***	-0.220***	-0.458***	-0.455***	-0.237***	-0.231***
	(0.083)	(0.071)	(0.079)	(0.066)	(0.042)	(0.040)	(0.039)	(0.034)
Student age 9-11	-0.130	-0.034	-0.080	0.025	-0.048**	-0.032	-0.004	0.016
	(0.081)	(0.064)	(0.085)	(0.070)	(0.023)	(0.023)	(0.027)	(0.026)
Female household head	-0.055	0.033	-0.032	0.038	-0.071	-0.069	-0.096*	-0.080*
	(0.076)	(0.085)	(0.082)	(0.095)	(0.053)	(0.047)	(0.051)	(0.044)
Reference: Head education is secondary / vocational								
Head has no education	-0.035	0.043	0.107	0.165	-0.040	-0.046	-0.054	-0.061
	(0.125)	(0.148)	(0.095)	(0.130)	(0.052)	(0.055)	(0.048)	(0.050)
Head has completed primary or less	0.028	-0.028	-0.087	-0.085	0.001	-0.002	-0.042	-0.035
	(0.124)	(0.112)	(0.115)	(0.115)	(0.043)	(0.047)	(0.040)	(0.038)
Head has tertiary or higher education	-0.012	0.134	0.011	0.205	0.119	0.104	0.159***	0.122**
	(0.119)	(0.148)	(0.119)	(0.133)	(0.081)	(0.082)	(0.047)	(0.048)
Reference: Top 40 percent								
Bottom 40 percent	0.172*	0.082	0.126	0.007	0.012	0.016	0.044	0.046
	(0.100)	(0.101)	(0.109)	(0.122)	(0.048)	(0.048)	(0.045)	(0.043)
Middle quintile	-0.109	-0.143	0.131	-0.056	0.033	-0.012	-0.010	-0.076*
	(0.128)	(0.101)	(0.083)	(0.076)	(0.050)	(0.052)	(0.047)	(0.046)
Constant	1.001***	1.169***	0.872***	0.923***	0.959***	0.972***	0.968***	0.937***
	(0.104)	(0.167)	(0.102)	(0.132)	(0.040)	(0.081)	(0.046)	(0.082)
Province level fixed effects	no	yes	no	yes	no	yes	no	yes
Number of observations	1,643	1,643	1,647	1,647	2,483	2,483	2,483	2,483
Adjusted R2	0.262	0.401	0.121	0.266	0.278	0.333	0.136	0.256

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 11. Child learning outcomes

	Child participated in distance learning	Child delayed return to school	Child did not return to school	Child participated in work
	coef/se	coef/se	coef/se	coef/se
Female student	-0.013	0.050	0.020	0.053
	(0.023)	(0.051)	(0.015)	(0.033)
Reference: Student age 12-14				
Student age 6-8	-0.032	0.122	-0.015	-0.176***
	(0.047)	(0.076)	(0.013)	(0.057)
Student age 9-11	-0.085**	0.127***	-0.019	-0.075
	(0.035)	(0.048)	(0.014)	(0.053)
Refence: Child in primary school				
Child in pre-school				-0.011
				(0.052)
Child in elementary school	0.048	-0.079	0.018	-0.004
	(0.033)	(0.072)	(0.012)	(0.032)
Female household head	0.063	0.052	-0.000	-0.059*
	(0.044)	(0.068)	(0.011)	(0.034)
Reference: Head education is secondary / vocational				
Head has no education	-0.015	0.153	0.002	-0.037
	(0.050)	(0.097)	(0.022)	(0.055)
Head has completed primary or less	-0.023	0.101	-0.023	-0.022
	(0.036)	(0.067)	(0.017)	(0.048)
Head has tertiary or higher education	0.054	0.081	-0.031**	-0.017
	(0.088)	(0.104)	(0.013)	(0.097)
Household is rural	0.025	-0.041	-0.007	-0.071
	(0.048)	(0.081)	(0.012)	(0.055)
Reference: Top 40 percent				
Bottom 40 percent	0.012	0.047	-0.001	0.076*
	(0.035)	(0.081)	(0.013)	(0.039)
Middle quintile	-0.034	-0.069	0.029	0.016
	(0.031)	(0.071)	(0.021)	(0.039)
Respondent is primary caregiver	0.004	-0.111	0.019*	0.037
	(0.031)	(0.076)	(0.010)	(0.031)
Constant	0.118	0.483*	0.010	0.054
	(0.161)	(0.257)	(0.020)	(0.079)
Province level fixed effects	yes	yes	yes	yes
Observations	1,518	1,346	1,346	1,604
Adjusted R2	0.166	0.164	0.104	0.200

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 12. Change in public trust issues since June (urban)

	Better								Worse							
	Community relations	Theft	Damage to property	Alcohol and drug abuse	Intimidation by police	Violence by police	Land disputes	Domestic abuse	Community relations	Theft	Damage to property	Alcohol and drug abuse	Intimidation by police	Violence by police	Land disputes	Domestic abuse
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female respondent	-0.161*	-0.120	-0.109	-0.049	-0.126	-0.076	-0.055	-0.024	0.053	-0.007	-0.045	0.078	0.023	0.005	-0.059	0.020
	(0.089)	(0.078)	(0.088)	(0.085)	(0.080)	(0.085)	(0.083)	(0.080)	(0.070)	(0.086)	(0.051)	(0.098)	(0.072)	(0.067)	(0.045)	(0.075)
Reference: Secondary education																
No education	-0.328***	-0.233***	-0.291***	-0.291***	-0.295***	-0.271***	-0.156*	-0.183**	0.108*	-0.110	-0.020	-0.244**	-0.074	-0.135	-0.083	-0.020
	(0.100)	(0.080)	(0.089)	(0.088)	(0.089)	(0.089)	(0.080)	(0.075)	(0.064)	(0.109)	(0.062)	(0.123)	(0.099)	(0.087)	(0.065)	(0.045)
Primary education or less	-0.047	0.033	-0.059	-0.157*	-0.187**	-0.139	0.034	-0.024	0.160**	-0.008	0.034	0.070	-0.008	-0.075	-0.006	0.023
	(0.105)	(0.098)	(0.110)	(0.091)	(0.087)	(0.093)	(0.097)	(0.092)	(0.066)	(0.105)	(0.073)	(0.112)	(0.083)	(0.063)	(0.050)	(0.037)
Tertiary or higher education	-0.085	0.022	-0.026	-0.092	-0.104	-0.037	-0.029	-0.022	0.282**	-0.121	-0.054	0.120	-0.022	-0.073	-0.016	0.224
	(0.102)	(0.099)	(0.108)	(0.102)	(0.104)	(0.107)	(0.110)	(0.098)	(0.134)	(0.120)	(0.058)	(0.133)	(0.112)	(0.105)	(0.047)	(0.139)
Reference: Southern region																
Highlands	0.247**	0.231**	0.272**	0.116	0.076	0.119	-0.050	0.026	0.001	0.001	-0.017	-0.100	-0.164*	-0.175**	0.060	-0.079
	(0.104)	(0.105)	(0.111)	(0.079)	(0.073)	(0.082)	(0.075)	(0.073)	(0.082)	(0.119)	(0.055)	(0.125)	(0.087)	(0.083)	(0.039)	(0.068)
Islands	0.031	0.016	0.058	0.095	0.226**	0.238**	-0.169**	-0.006	0.011	0.007	0.044	-0.165	-0.152	-0.173*	0.072	0.048
	(0.112)	(0.114)	(0.111)	(0.111)	(0.112)	(0.118)	(0.069)	(0.115)	(0.071)	(0.127)	(0.069)	(0.126)	(0.102)	(0.098)	(0.050)	(0.078)
Momase	0.213**	0.124	0.295***	0.190*	0.278***	0.190*	0.215**	0.081	0.019	0.030	0.048	-0.147	-0.066	-0.106	0.082*	-0.043
	(0.097)	(0.085)	(0.098)	(0.097)	(0.094)	(0.099)	(0.103)	(0.095)	(0.087)	(0.117)	(0.062)	(0.121)	(0.110)	(0.104)	(0.045)	(0.092)
Reference: Top 40 percent																
Bottom 40 percent	-0.059	-0.041	-0.116	0.023	-0.091	0.014	-0.228***	0.024	-0.171**	-0.224**	-0.084	-0.064	-0.054	0.004	0.018	-0.014
	(0.114)	(0.108)	(0.115)	(0.094)	(0.073)	(0.095)	(0.086)	(0.095)	(0.066)	(0.089)	(0.070)	(0.151)	(0.072)	(0.056)	(0.064)	(0.043)
Middle quintile	0.204	0.112	0.061	0.191	0.206	0.195	-0.012	0.097	-0.118**	-0.233***	-0.116*	-0.111	-0.115**	-0.062	0.146	0.004
	(0.131)	(0.142)	(0.142)	(0.151)	(0.141)	(0.149)	(0.136)	(0.153)	(0.059)	(0.079)	(0.060)	(0.118)	(0.056)	(0.041)	(0.126)	(0.057)
Constant	0.263***	0.175**	0.205**	0.174**	0.241***	0.182**	0.224**	0.145**	0.012	0.317***	0.134**	0.454***	0.222**	0.250**	0.047	0.068
	(0.079)	(0.080)	(0.081)	(0.075)	(0.079)	(0.079)	(0.092)	(0.063)	(0.042)	(0.120)	(0.063)	(0.121)	(0.112)	(0.110)	(0.041)	(0.053)
Observations	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158
Adjusted R2	0.154	0.101	0.150	0.111	0.201	0.108	0.151	0.035	0.143	0.061	0.029	0.082	0.055	0.074	0.072	0.114

note: *** p<0.01, ** p<0.05, * p<0.1

Source. Round two of the high frequency mobile phone survey.

Table 13. Change in public trust issues since June (rural)

	Better								Worse							
	Community relations	Theft	Damage to property	Alcohol and drug abuse	Intimidation by police	Violence by police	Land disputes	Domestic abuse	Community relations	Theft	Damage to property	Alcohol and drug abuse	Intimidation by police	Violence by police	Land disputes	Domestic abuse
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female respondent	-0.011	0.015	-0.029	0.019	0.054	0.046	-0.033	0.080	0.023	-0.014	-0.010	-0.004	-0.005	-0.010	-0.036	0.044
	(0.069)	(0.064)	(0.058)	(0.052)	(0.061)	(0.063)	(0.061)	(0.060)	(0.034)	(0.043)	(0.042)	(0.055)	(0.017)	(0.022)	(0.022)	(0.044)
Reference: Secondary education																
No education	0.014	0.069	0.066	0.017	0.035	-0.019	0.125	0.081	-0.051	-0.133***	-0.111**	-0.081	0.011	0.010	-0.027	-0.021
	(0.087)	(0.079)	(0.077)	(0.065)	(0.085)	(0.086)	(0.085)	(0.081)	(0.037)	(0.049)	(0.048)	(0.077)	(0.028)	(0.031)	(0.031)	(0.033)
Primary education or less	-0.054	-0.027	-0.035	-0.049	-0.074	-0.104*	-0.007	-0.052	0.039	0.007	0.039	0.038	0.006	0.025	0.017	0.127***
	(0.063)	(0.058)	(0.057)	(0.047)	(0.058)	(0.062)	(0.056)	(0.057)	(0.033)	(0.051)	(0.049)	(0.062)	(0.017)	(0.019)	(0.024)	(0.042)
Tertiary or higher education	0.009	0.089	0.279**	0.051	0.022	0.002	0.148	0.157	0.148*	0.280**	0.107	0.266**	0.111	0.135	0.133	0.102
	(0.139)	(0.139)	(0.138)	(0.136)	(0.141)	(0.143)	(0.141)	(0.142)	(0.087)	(0.136)	(0.097)	(0.134)	(0.085)	(0.083)	(0.085)	(0.089)
Reference: Southern region																
Highlands	-0.021	0.114	0.085	0.107**	0.153***	0.066	0.160**	0.049	0.065	0.101	0.141**	-0.055	0.011	0.053*	0.063**	0.002
	(0.097)	(0.091)	(0.072)	(0.044)	(0.057)	(0.077)	(0.066)	(0.073)	(0.047)	(0.069)	(0.065)	(0.106)	(0.020)	(0.030)	(0.024)	(0.093)
Islands	0.025	-0.020	-0.039	0.049	0.169**	0.105	0.111	-0.020	0.048	0.053	0.037	0.034	0.025	0.048*	0.071**	-0.012
	(0.106)	(0.099)	(0.087)	(0.069)	(0.082)	(0.097)	(0.082)	(0.088)	(0.035)	(0.059)	(0.046)	(0.107)	(0.026)	(0.025)	(0.029)	(0.068)
Momase	-0.106	-0.015	0.015	0.062	0.073	0.010	0.115	0.006	0.097**	0.111**	0.146***	-0.046	0.063**	0.070***	0.114***	0.042
	(0.095)	(0.091)	(0.075)	(0.046)	(0.055)	(0.076)	(0.070)	(0.077)	(0.038)	(0.056)	(0.052)	(0.096)	(0.031)	(0.027)	(0.035)	(0.081)
Reference: Top 40 percent																
Bottom 40 percent	0.054	-0.034	-0.104	-0.002	-0.005	0.015	-0.115*	-0.096	0.027	-0.031	-0.035	0.026	0.011	0.011	0.005	0.022
	(0.068)	(0.070)	(0.065)	(0.045)	(0.063)	(0.067)	(0.067)	(0.067)	(0.034)	(0.045)	(0.043)	(0.066)	(0.020)	(0.019)	(0.025)	(0.048)
Middle quintile	-0.026	-0.119**	-0.107*	-0.011	-0.009	-0.007	-0.167***	-0.155**	0.002	-0.009	0.012	0.124	0.004	-0.001	0.006	0.018
	(0.061)	(0.060)	(0.064)	(0.046)	(0.065)	(0.066)	(0.064)	(0.063)	(0.031)	(0.059)	(0.058)	(0.083)	(0.018)	(0.021)	(0.024)	(0.054)
Constant	0.289***	0.241**	0.301***	0.091	0.128*	0.238**	0.207***	0.251***	-0.024	0.133**	0.076	0.269***	0.002	-0.025	0.016	0.007
	(0.097)	(0.101)	(0.092)	(0.063)	(0.077)	(0.097)	(0.072)	(0.091)	(0.047)	(0.066)	(0.060)	(0.091)	(0.029)	(0.021)	(0.029)	(0.061)
Observations	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662
Adjusted R2	0.022	0.048	0.044	0.023	0.043	0.023	0.060	0.059	0.040	0.057	0.051	0.048	0.022	0.024	0.033	0.060

note: *** p<0.01, ** p<0.05, * p<0.1

Table 14. Child discipline practices

	Took away privileges	Called the child dumb or lazy	Shook the child	Spanked the child with bare hand	Spanked or hit the child with an object
	coef/se	coef/se	coef/se	coef/se	coef/se
Female child	0.061	0.050	-0.033	0.011	-0.051
	(0.054)	(0.040)	(0.021)	(0.054)	(0.047)
Reference: Child age 12-14					
Child age 3-5	-0.000	-0.055	0.008	0.009	0.165***
	(0.070)	(0.057)	(0.037)	(0.073)	(0.061)
Child age 6-8	0.032	-0.071	0.045	0.109	0.182***
	(0.078)	(0.051)	(0.039)	(0.074)	(0.065)
Child age 9-11	0.001	-0.048	-0.043	-0.025	0.011
	(0.076)	(0.056)	(0.034)	(0.075)	(0.054)
Female respondent	-0.102*	0.033	0.029	0.015	-0.044
	(0.054)	(0.039)	(0.031)	(0.059)	(0.047)
Reference: Secondary education					
No education	-0.045	-0.097*	0.069	0.145	-0.158*
	(0.083)	(0.051)	(0.045)	(0.092)	(0.086)
Primary education or less	0.036	-0.016	0.031	0.006	-0.117*
	(0.070)	(0.038)	(0.040)	(0.075)	(0.067)
Tertiary or higher education	-0.041	-0.073	-0.000	-0.278***	-0.227***
	(0.103)	(0.091)	(0.031)	(0.093)	(0.086)
Household is rural	-0.083	0.013	-0.036	0.045	0.012
	(0.081)	(0.045)	(0.059)	(0.091)	(0.078)
Reference: Top 40 percent					
Bottom 40 percent	0.051	-0.015	0.002	-0.002	-0.057
	(0.075)	(0.045)	(0.042)	(0.081)	(0.068)
Middle quintile	0.062	0.080	-0.015	-0.083	-0.044
	(0.078)	(0.067)	(0.034)	(0.081)	(0.067)
Constant	0.447***	0.112	0.068	0.365**	0.277**
	(0.154)	(0.079)	(0.069)	(0.158)	(0.118)
Province level fixed effects	yes	yes	yes	yes	yes
Observations	2,372	2,308	2,317	2,307	2,368
Adjusted R2	0.121	0.109	0.156	0.090	0.140

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 15. Internal household instability

	Increase in physical discipline	Decrease in physical discipline	Frequency of family arguments increased	Frequency of family arguments decreased
	coef/se	coef/se	coef/se	coef/se
Female respondent	0.021	0.029	0.004	0.036
	(0.028)	(0.038)	(0.038)	(0.027)
Reference: Secondary education				
No education	-0.144***	-0.036	-0.084	0.088
	(0.044)	(0.043)	(0.053)	(0.054)
Primary education or less	-0.105**	-0.011	-0.017	-0.002
	(0.041)	(0.042)	(0.046)	(0.037)
Tertiary or higher education	0.015	-0.047	-0.158**	-0.018
	(0.112)	(0.038)	(0.062)	(0.039)
Household size	0.002	-0.006	0.008	0.014**
	(0.005)	(0.008)	(0.007)	(0.006)
Reference: Top 40 percent				
Bottom 40 percent	-0.025	0.101**	0.032	-0.013
	(0.028)	(0.046)	(0.060)	(0.035)
Middle quintile	0.004	0.109***	0.087	-0.010
	(0.033)	(0.039)	(0.054)	(0.043)
Rural	0.075**	-0.002	0.045	-0.006
	(0.029)	(0.036)	(0.044)	(0.050)
Constant	0.152*	0.074	0.031	-0.042
	(0.091)	(0.078)	(0.097)	(0.075)
Province level fixed effects	yes	yes	yes	yes
Observations	2,444	2,444	2,444	2,444
Adjusted R2	0.078	0.074	0.185	0.185

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone survey

Table 16. Changes in child behavior in last 15 days

	Cried more than usual	Speaking less well than he/ she used to	Been more withdrawn or very quiet more than usual	Been irritable more than usual	Acted defiant more than usual	Destroyed or damaging things more than usual
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female child	-0.005	0.014	-0.021	-0.067*	-0.005	-0.002
	(0.039)	(0.033)	(0.028)	(0.040)	(0.025)	(0.019)
Reference: Child age 12-14						
Child age 3-5	0.217***	-0.048	0.018	0.064	0.005	-0.055*
	(0.048)	(0.041)	(0.038)	(0.043)	(0.023)	(0.031)
Child age 6-8	0.127***	0.042	0.002	0.106**	0.049	-0.008
	(0.045)	(0.049)	(0.042)	(0.049)	(0.034)	(0.037)
Child age 9-11	0.025	0.021	-0.013	0.068	0.052	-0.021
	(0.038)	(0.049)	(0.036)	(0.051)	(0.036)	(0.036)
Female respondent	0.005	0.017	-0.075**	-0.054	-0.033	0.018
	(0.046)	(0.036)	(0.031)	(0.035)	(0.024)	(0.022)
Reference: Secondary education						
No education	0.100	-0.014	-0.057	0.039	-0.071*	0.018
	(0.064)	(0.055)	(0.054)	(0.060)	(0.038)	(0.034)
Primary education or less	0.046	-0.024	-0.030	0.009	-0.077**	-0.045**
	(0.052)	(0.059)	(0.048)	(0.038)	(0.039)	(0.022)
Tertiary or higher education	0.036	-0.072	-0.033	-0.021	-0.065*	-0.058**
	(0.072)	(0.049)	(0.065)	(0.070)	(0.039)	(0.027)
Household is rural	0.169**	0.081***	0.042	0.006	-0.023	0.001
	(0.074)	(0.031)	(0.034)	(0.042)	(0.027)	(0.020)
Reference: Top 40 percent						
Bottom 40 percent	-0.120**	0.014	-0.048	0.015	0.022	0.017
	(0.057)	(0.036)	(0.044)	(0.055)	(0.038)	(0.025)
Middle quintile	-0.107	0.001	-0.018	-0.035	0.023	0.017
	(0.069)	(0.046)	(0.046)	(0.047)	(0.037)	(0.024)
Constant	-0.145*	0.020	0.151**	-0.025	0.064	0.089
	(0.085)	(0.073)	(0.075)	(0.063)	(0.040)	(0.061)
Province level fixed effects	yes	yes	yes	yes	yes	yes
Observations	2,402	2,399	2,359	2,327	2,339	2,395
Adjusted R2	0.242	0.144	0.076	0.130	0.087	0.072

note: *** p<0.01, ** p<0.05, * p<0.1

Source. UNICEF mobile phone surve